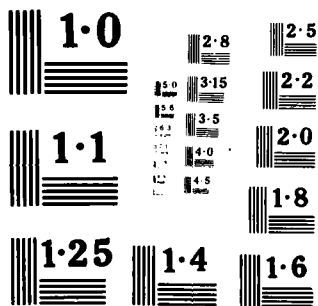


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**ANTARCTIC ICE CHARTS
1983—1984**

AD-A159 907

**PREPARED BY
NAVAL POLAR OCEANOGRAPHY CENTER,
SUITLAND, MD**

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FOREWORD

The U.S. Navy has a long and colorful history of polar exploration and currently is an active participant in the growing national activity in the Arctic and Antarctic. The strategic importance and increased demand for the natural resources of these areas have resulted in a greater requirement for environmental information. In 1976, the National Oceanic and Atmospheric Administration (NOAA) joined the Navy in forming a Joint Ice Center (JIC) to combine efforts and resources in sea ice analysis and forecasting.

Through 1972, reliable sea ice information in the polar regions was based on a relatively few shore station and ship reports augmented by limited aerial reconnaissance data. These data were further restricted mainly to the relatively small areas observed primarily during the ship operating seasons. The advent of high resolution satellite imagery combined with the ground truth of conventional observations has in recent years enabled a description of the polar ice fields on a semi-synoptic scale in both polar regions.

This publication is the sixth in a continuing bi-yearly series of Antarctic sea ice atlases prepared in the Joint Ice Center at the Naval Polar Oceanography Center, Suitland. The atlas contains weekly charts depicting Southern Hemisphere ice conditions and extents. The information presented was prepared under operational time constraints principally from satellite imagery supplemented by conventional observations. Table 1, located on the inside back cover, summarizes satellite data availability for 1983 and 1984.

The purpose of this atlas is to provide operators and researchers with reliable weekly hemispheric ice analyses. Satellite data limitations and other difficulties involved in manually synthesizing various forms of ice data have evolved the following analysis procedures:

a. Conventional shore station, ship and aerial ice reconnaissance observations are plotted on base charts and evaluated for timeliness.

b. Satellite data is analyzed for ice information content, with the most recent and highest resolution considered first. Synthesis of conventional with satellite data yields the final analysis.

c. Where sufficient data is not available to define the sea ice limit, an estimated ice boundary is depicted. After one week of no data availability the ice edge position is based on analyzed theoretical ice drift data and other diagnostic aids. During subsequent weeks of no data availability the ice edges approach seasonal mean positions.

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) These are approximately 7-days analysis of sea ice prepared by the Naval Polar Oceanography Center, Suitland, MD. Included are ice concentration and ice thickness (age).		

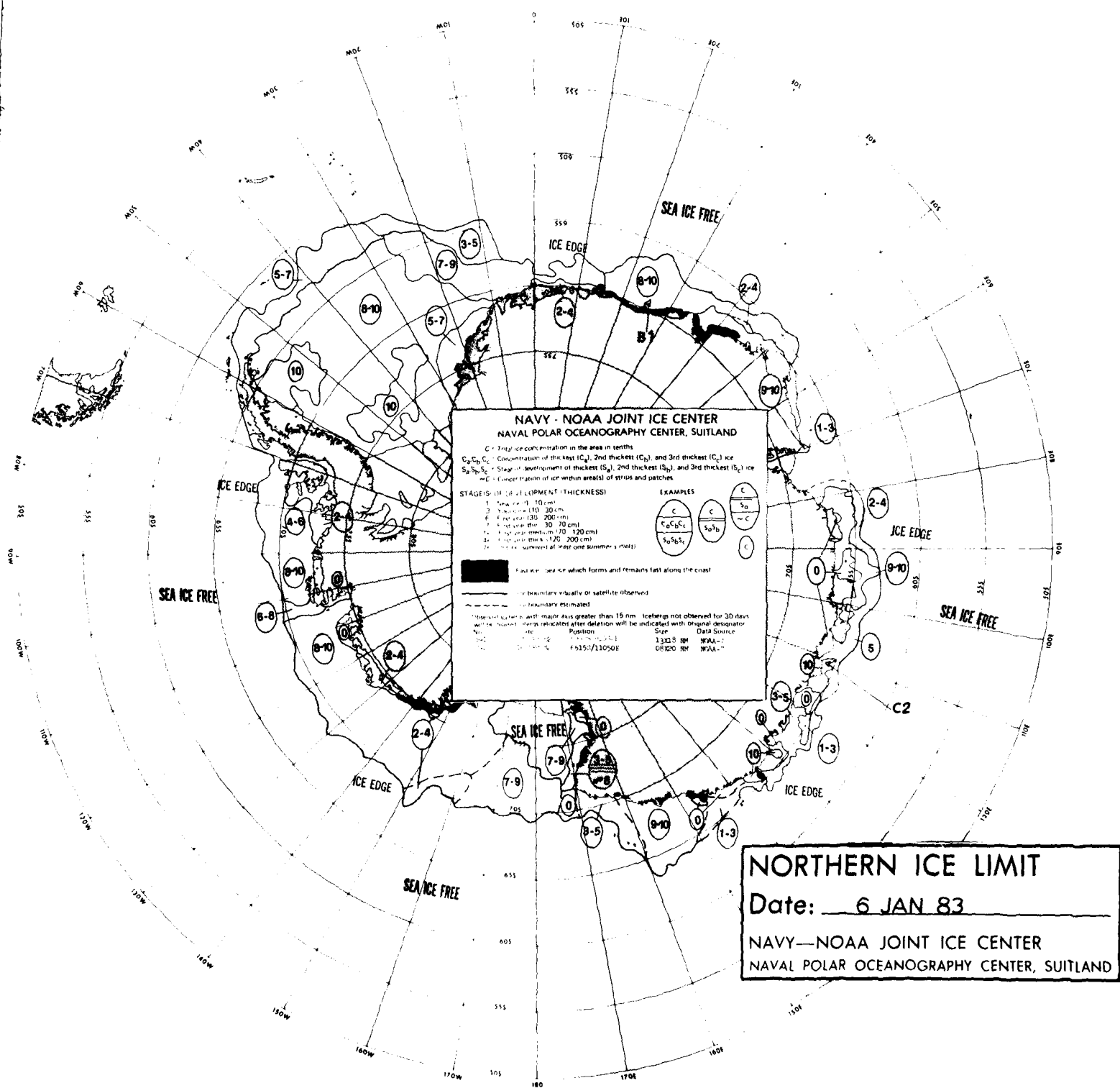
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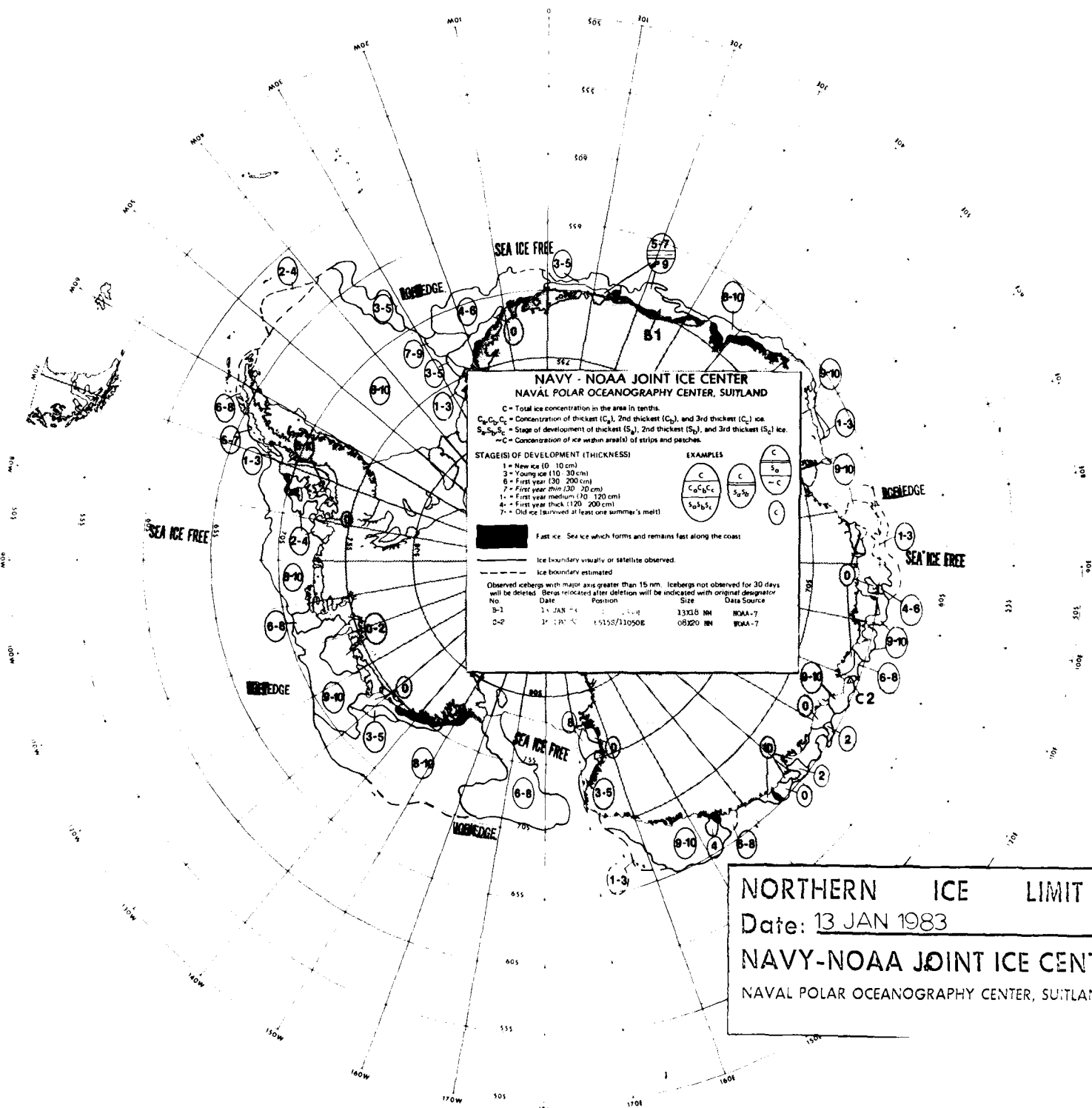
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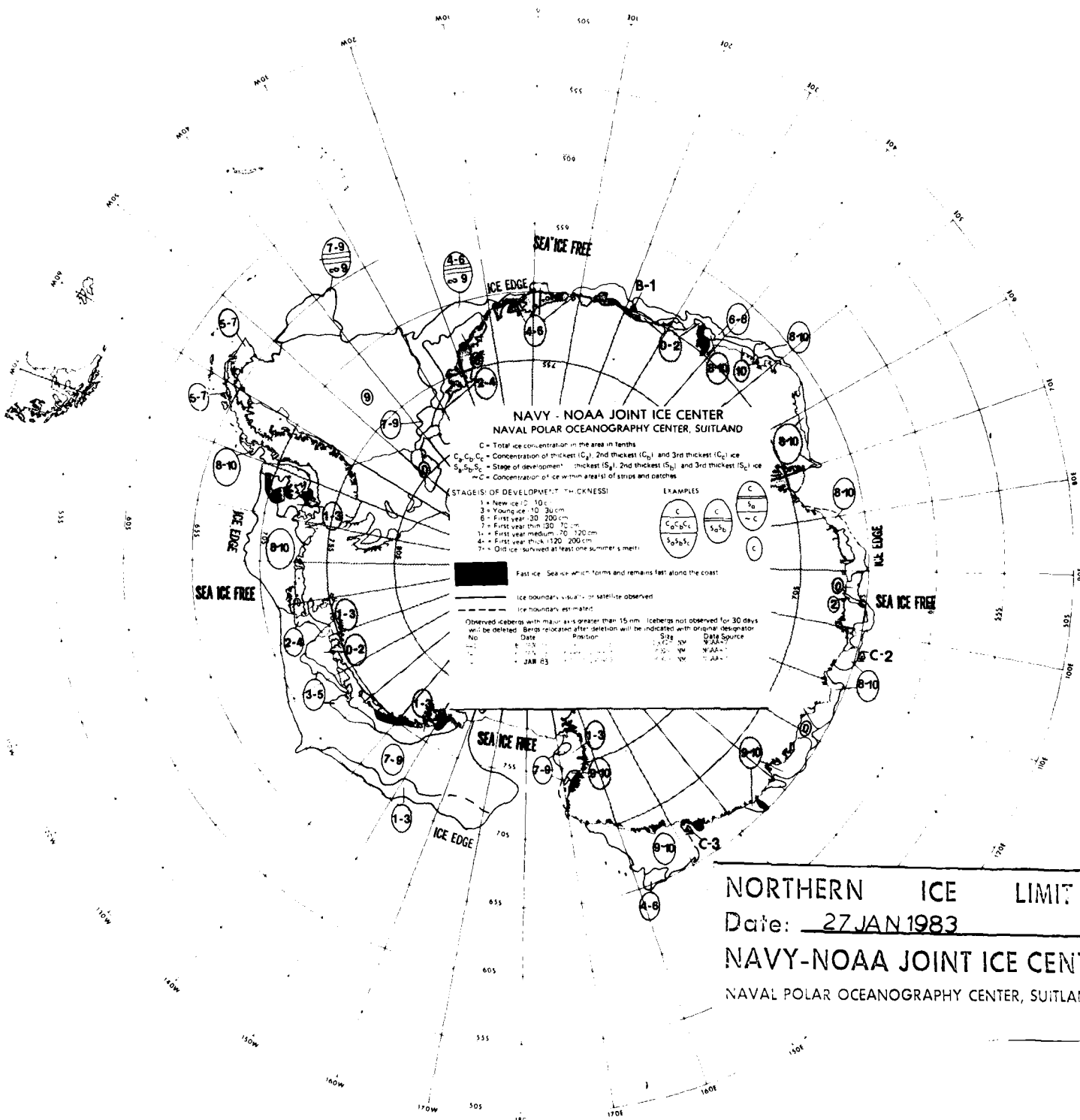
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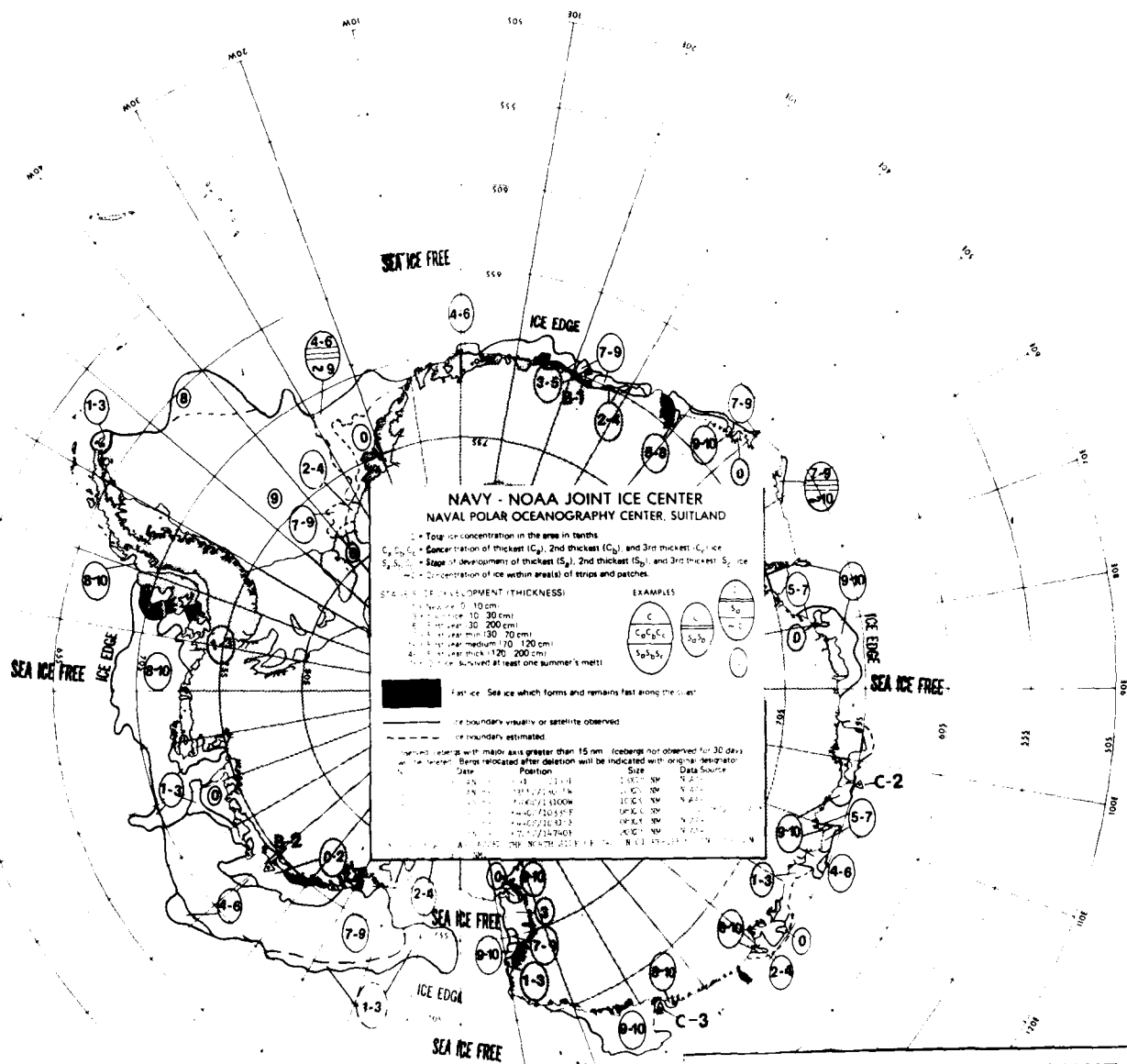
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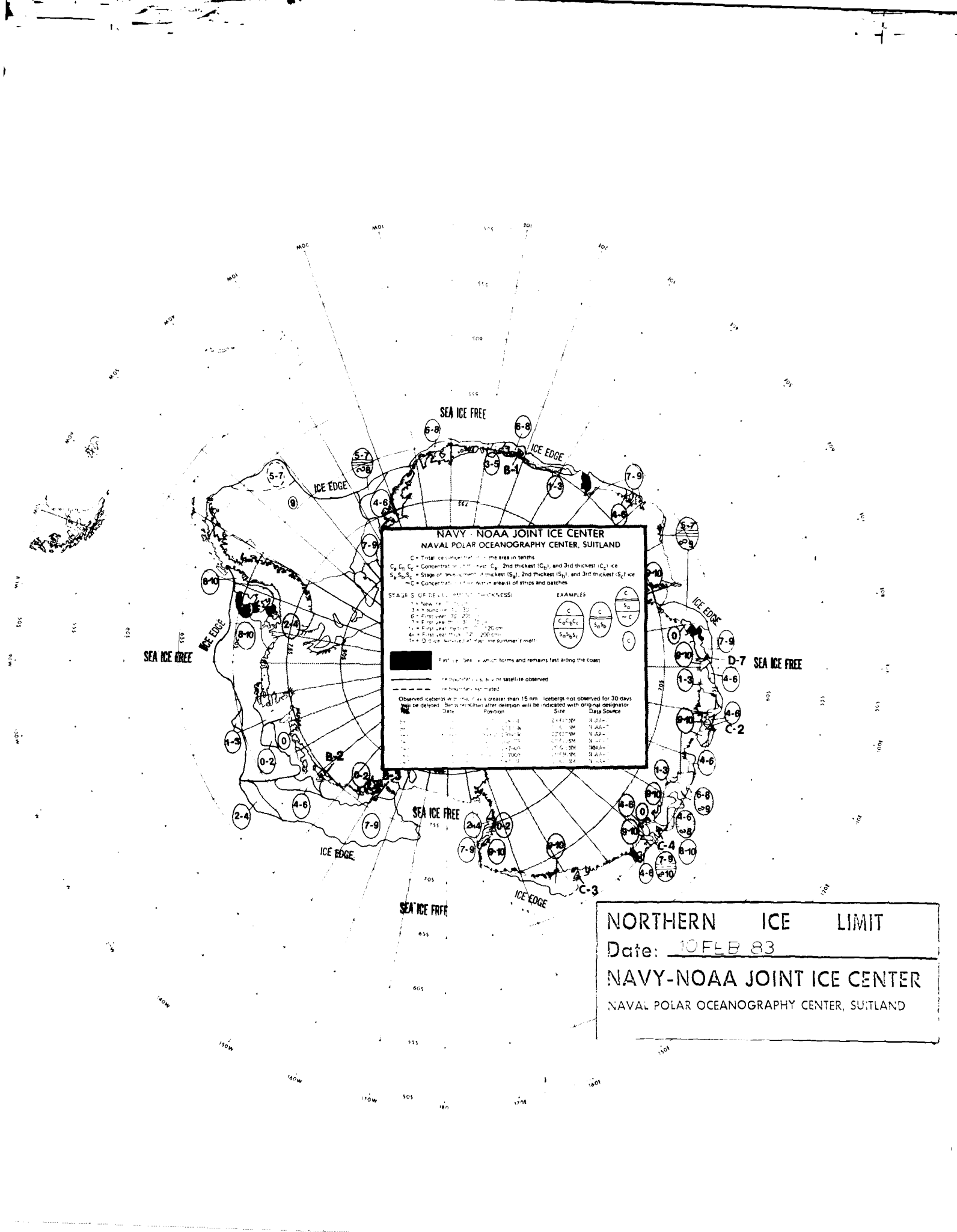
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C = Total ice concentration in the area in tenths
 C₁, C₂, C₃ = Concentration of 1st thickest (C₁), 2nd thickest (C₂), and 3rd thickest (C₃) ice
 S₁, S₂, S₃ = Stage of new growth of 1st thickest (S₁), 2nd thickest (S₂), and 3rd thickest (S₃) ice
 -C = Concentration of ice within areas of strips and patches

STAGE 5 - ICE DEVELOPMENT THICKNESS:

1. New ice
2. First year ice
3. Second year ice
4. Third year ice
5. Fourth year ice
6. Fifth year ice
7. Sixth year ice
8. Seventh year ice
9. Eighth year ice
10. Ninth year ice
11. Tenth year ice
12. Eleventh year ice
13. Twelfth year ice
14. Thirteenth year ice
15. Fourteenth year ice
16. Fifteenth year ice
17. Sixteenth year ice
18. Seventeenth year ice
19. Eighteenth year ice
20. Nineteenth year ice
21. Twentieth year ice
22. Twenty-first year ice
23. Twenty-second year ice
24. Twenty-third year ice
25. Twenty-fourth year ice
26. Twenty-fifth year ice
27. Twenty-sixth year ice
28. Twenty-seventh year ice
29. Twenty-eighth year ice
30. Twenty-ninth year ice
31. Thirtieth year ice
32. Thirty-first year ice
33. Thirty-second year ice
34. Thirty-third year ice
35. Thirty-fourth year ice
36. Thirty-fifth year ice
37. Thirty-sixth year ice
38. Thirty-seventh year ice
39. Thirty-eighth year ice
40. Thirty-ninth year ice
41. Fortieth year ice
42. Forty-first year ice
43. Forty-second year ice
44. Forty-third year ice
45. Forty-fourth year ice
46. Forty-fifth year ice
47. Forty-sixth year ice
48. Forty-seventh year ice
49. Forty-eighth year ice
50. Forty-ninth year ice
51. Fiftieth year ice
52. Fifty-first year ice
53. Fifty-second year ice
54. Fifty-third year ice
55. Fifty-fourth year ice
56. Fifty-fifth year ice
57. Fifty-sixth year ice
58. Fifty-seventh year ice
59. Fifty-eighth year ice
60. Fifty-ninth year ice
61. Sixtieth year ice
62. Sixty-first year ice
63. Sixty-second year ice
64. Sixty-third year ice
65. Sixty-fourth year ice
66. Sixty-fifth year ice
67. Sixty-sixth year ice
68. Sixty-seventh year ice
69. Sixty-eighth year ice
70. Sixty-ninth year ice
71. Seventieth year ice
72. Seventy-first year ice
73. Seventy-second year ice
74. Seventy-third year ice
75. Seventy-fourth year ice
76. Seventy-fifth year ice
77. Seventy-sixth year ice
78. Seventy-seventh year ice
79. Seventy-eighth year ice
80. Seventy-ninth year ice
81. Eightieth year ice
82. Eighty-first year ice
83. Eighty-second year ice
84. Eighty-third year ice
85. Eighty-fourth year ice
86. Eighty-fifth year ice
87. Eighty-sixth year ice
88. Eighty-seventh year ice
89. Eighty-eighth year ice
90. Eighty-ninth year ice
91. Ninetieth year ice
92. Ninety-first year ice
93. Ninety-second year ice
94. Ninety-third year ice
95. Ninety-fourth year ice
96. Ninety-fifth year ice
97. Ninety-sixth year ice
98. Ninety-seventh year ice
99. Ninety-eighth year ice
100. Ninety-ninth year ice
101. One hundred year ice

EXAMPLES

C	C ₁	C ₂	C ₃
5	1	2	3
S ₁	S ₂	S ₃	S ₄
1	2	3	4

LEGEND

- Ice edge
- Ice edge (satellite observed)
- Ice edge (estimated)
- Ice edge (estimated after deletion)

NOTES

- Icebergs with a maximum length greater than 15 nm. Icebergs not observed for 30 days will be deleted. Icebergs deleted after deletion will be indicated with original designator.
- Icebergs with a maximum length greater than 15 nm. Icebergs not observed for 30 days will be deleted. Icebergs deleted after deletion will be indicated with original designator.

DATA SOURCE

Designator	Position	Size	Date	Data Source
B-1	75°N 150°W	1000	24 FEB 83	NOAA
B-2	75°N 150°W	1000	24 FEB 83	NOAA
B-3	75°N 150°W	1000	24 FEB 83	NOAA
B-4	75°N 150°W	1000	24 FEB 83	NOAA
B-5	75°N 150°W	1000	24 FEB 83	NOAA
B-6	75°N 150°W	1000	24 FEB 83	NOAA
B-7	75°N 150°W	1000	24 FEB 83	NOAA
B-8	75°N 150°W	1000	24 FEB 83	NOAA
B-9	75°N 150°W	1000	24 FEB 83	NOAA
B-10	75°N 150°W	1000	24 FEB 83	NOAA
B-11	75°N 150°W	1000	24 FEB 83	NOAA
B-12	75°N 150°W	1000	24 FEB 83	NOAA
B-13	75°N 150°W	1000	24 FEB 83	NOAA
B-14	75°N 150°W	1000	24 FEB 83	NOAA
B-15	75°N 150°W	1000	24 FEB 83	NOAA
B-16	75°N 150°W	1000	24 FEB 83	NOAA
B-17	75°N 150°W	1000	24 FEB 83	NOAA
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B-82	75°N 150°W	1000	24 FEB 83	NOAA
B-83	75°N 150°W	1000	24 FEB 83	NOAA
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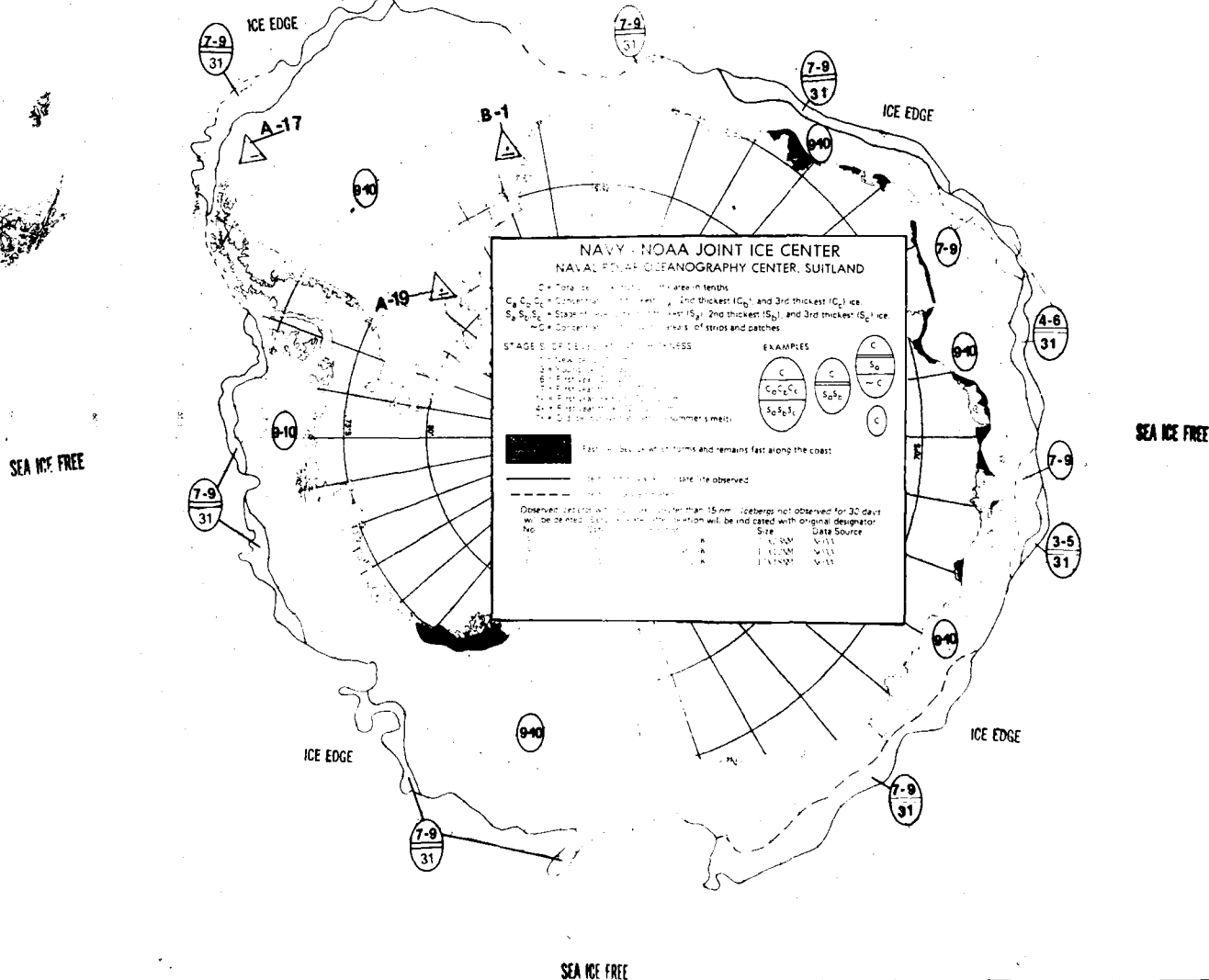
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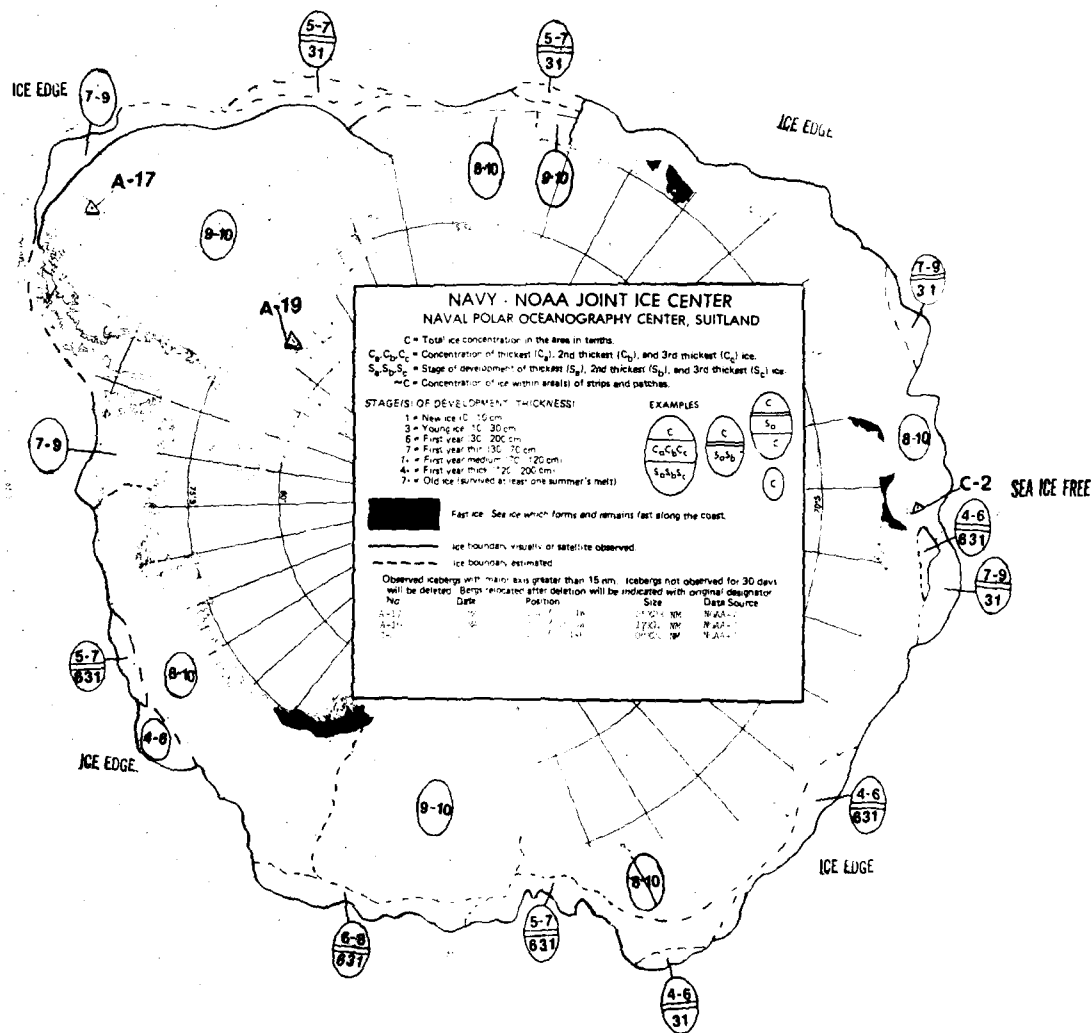
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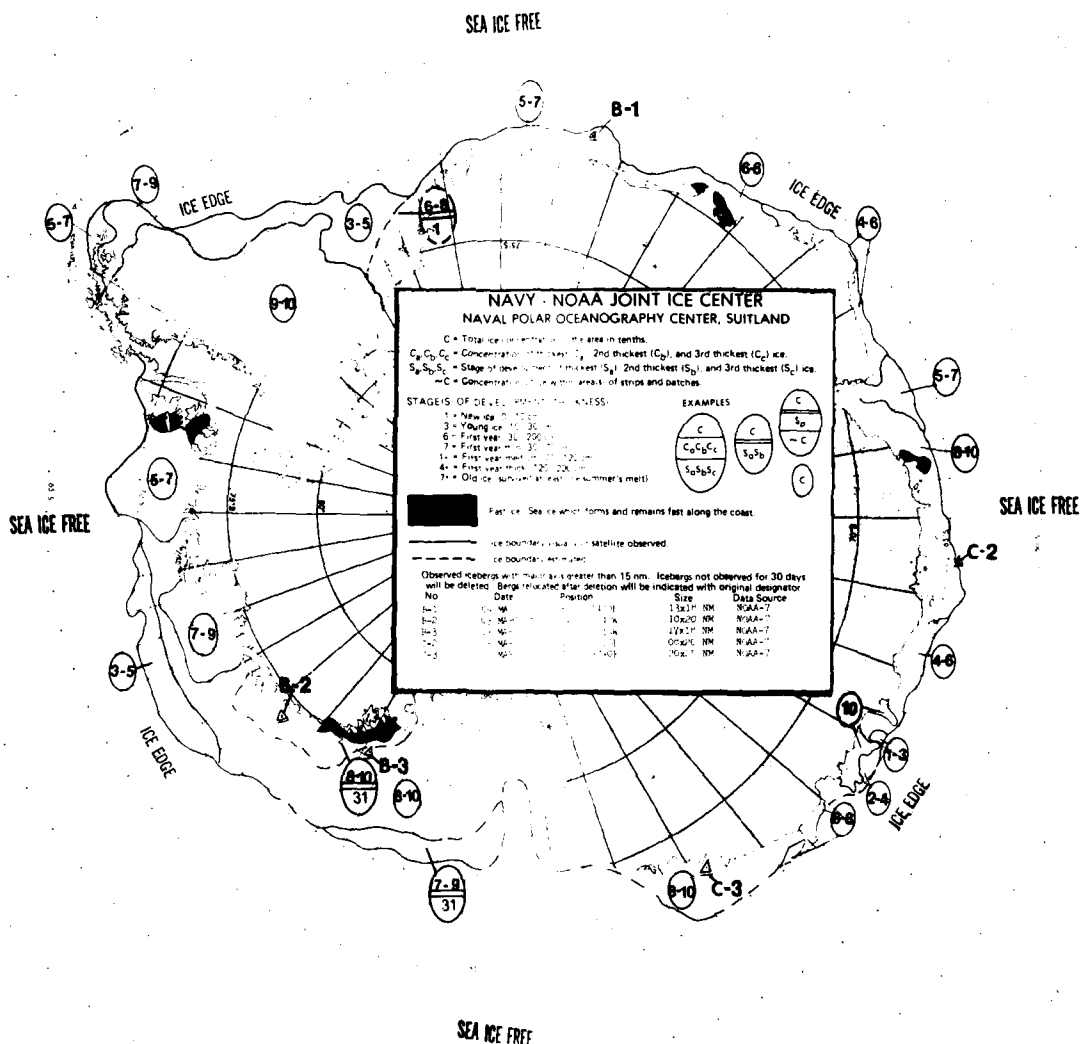
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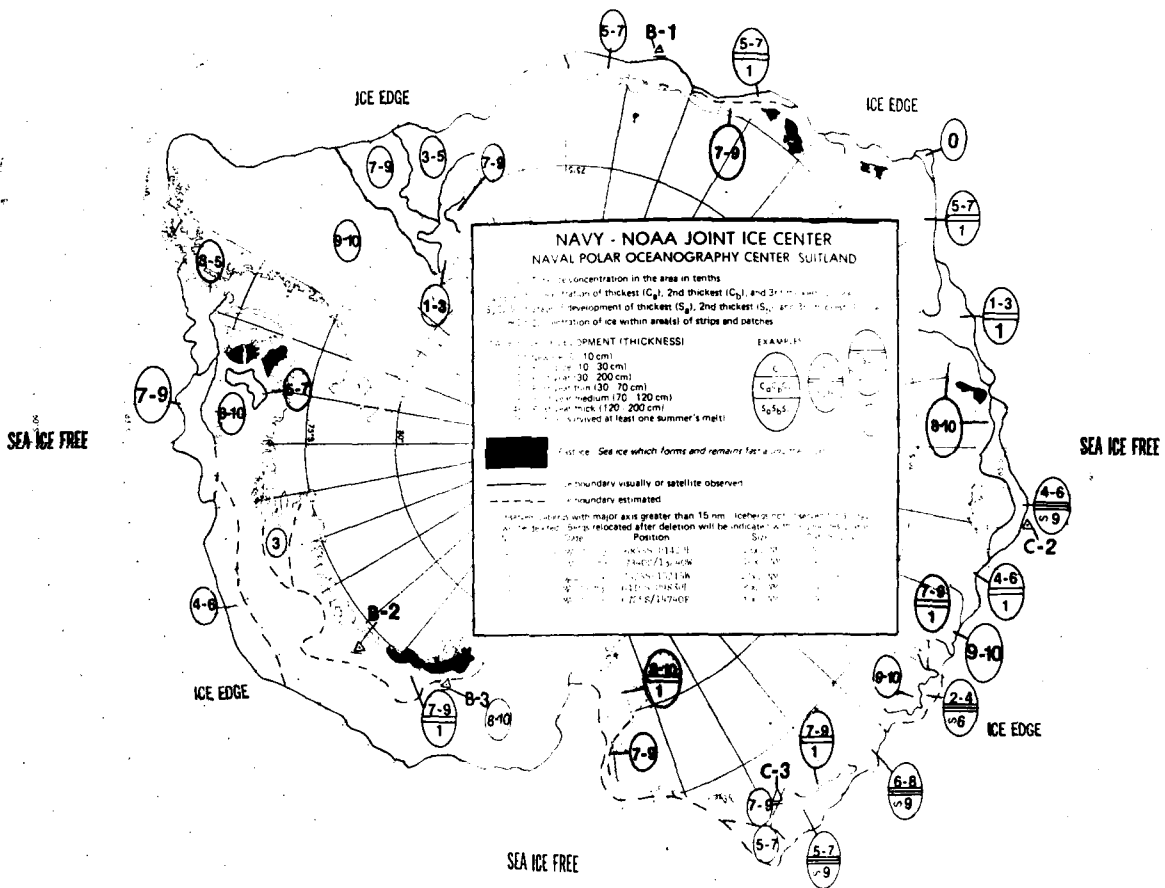


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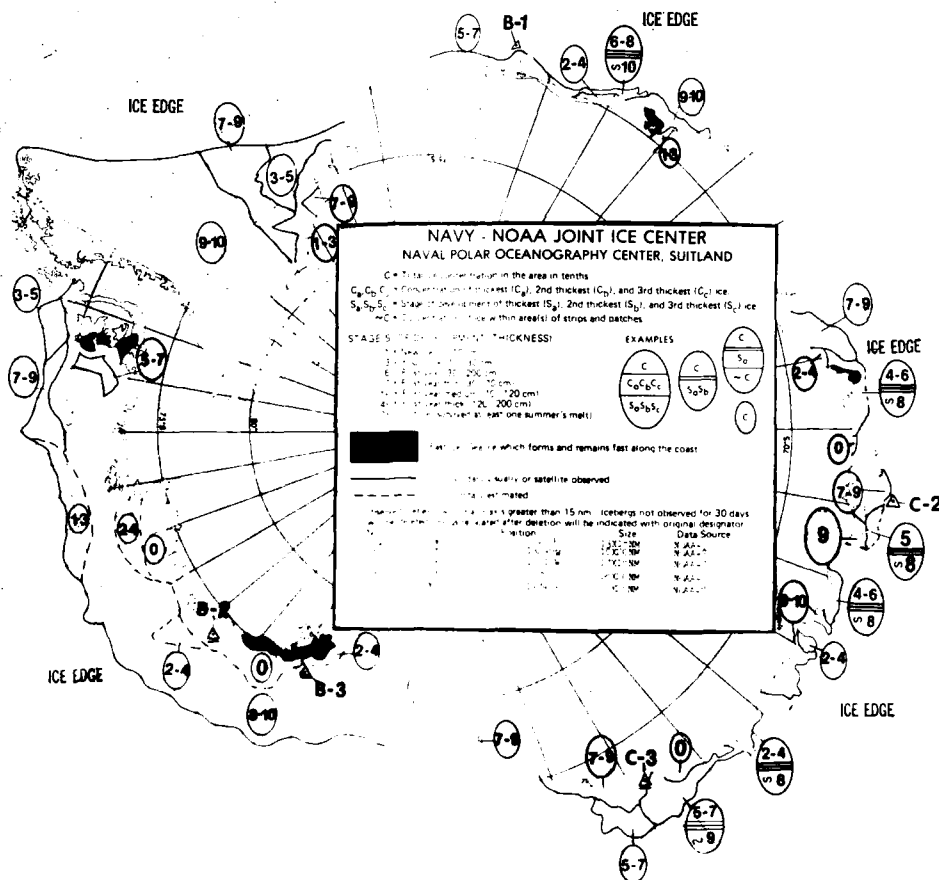
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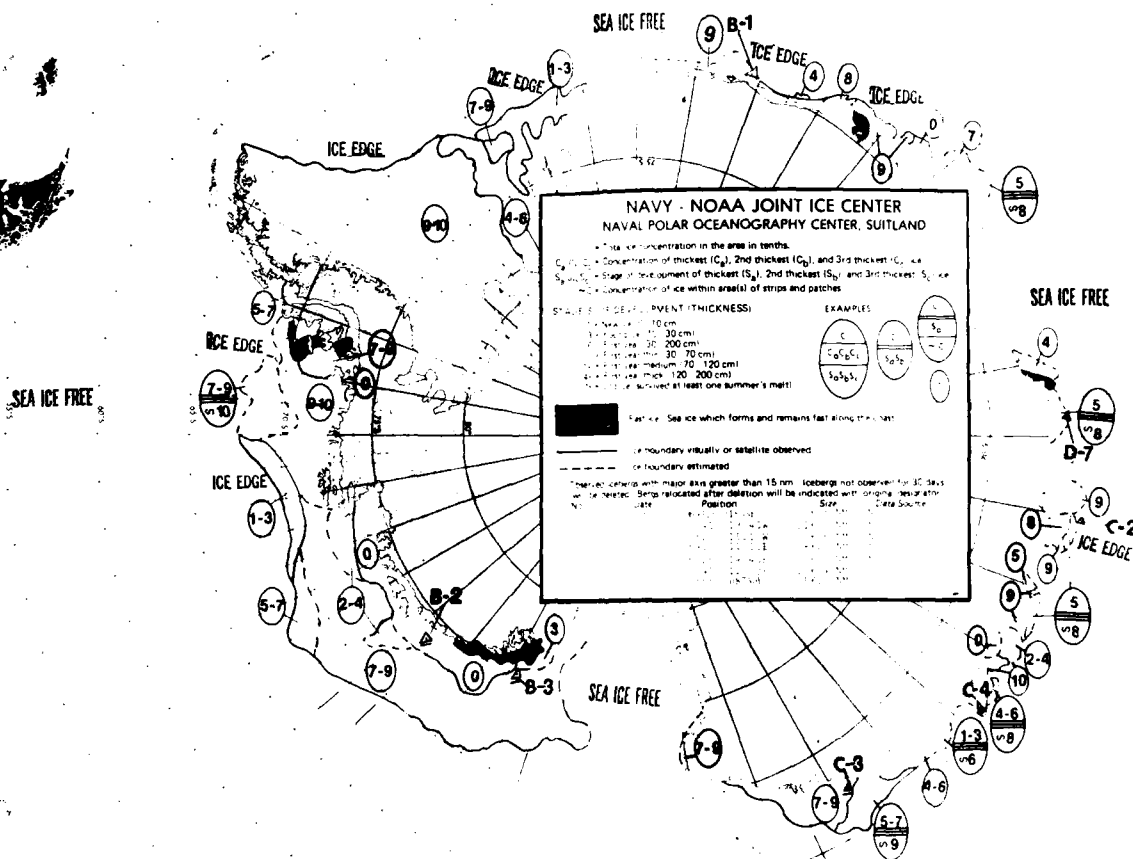
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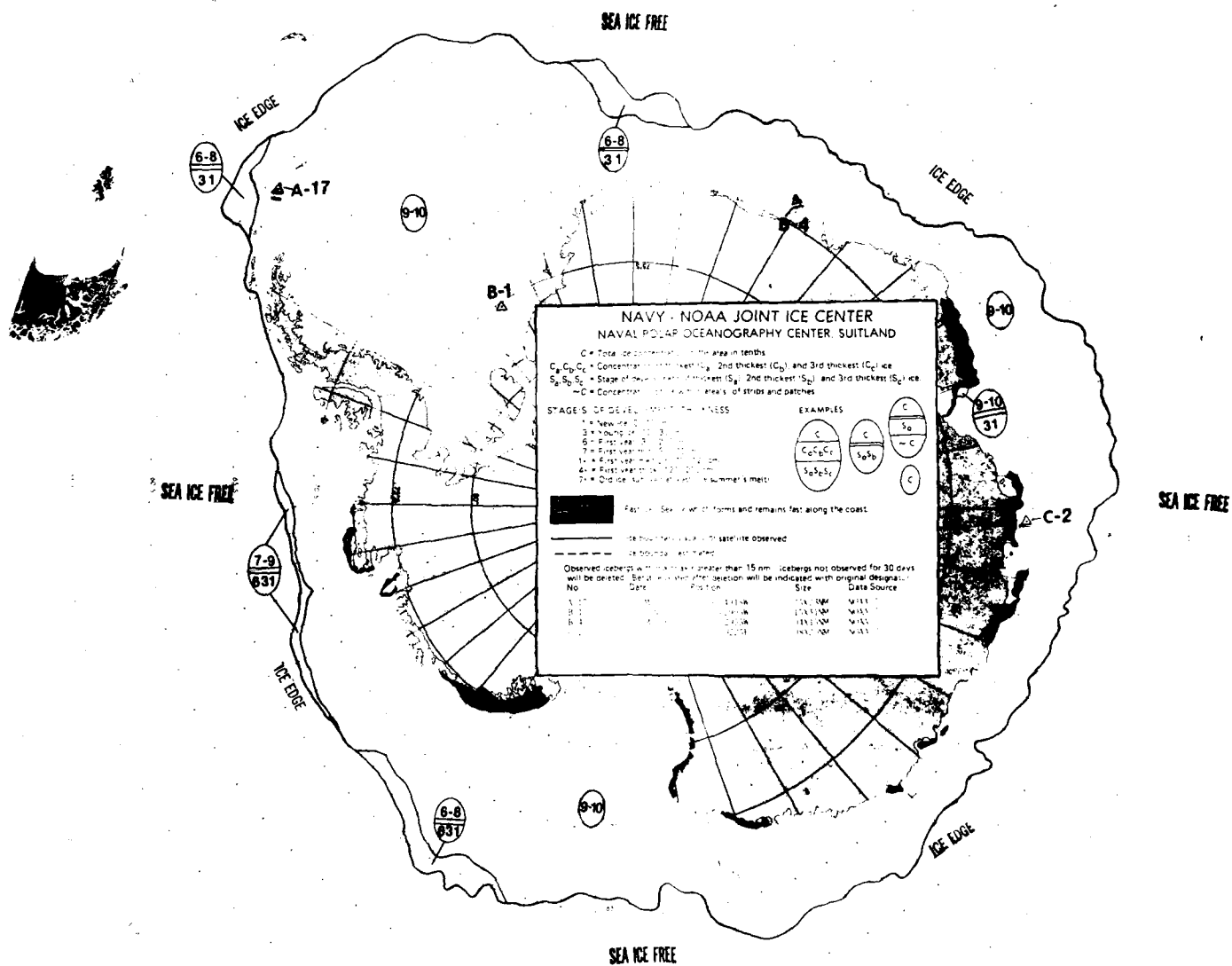


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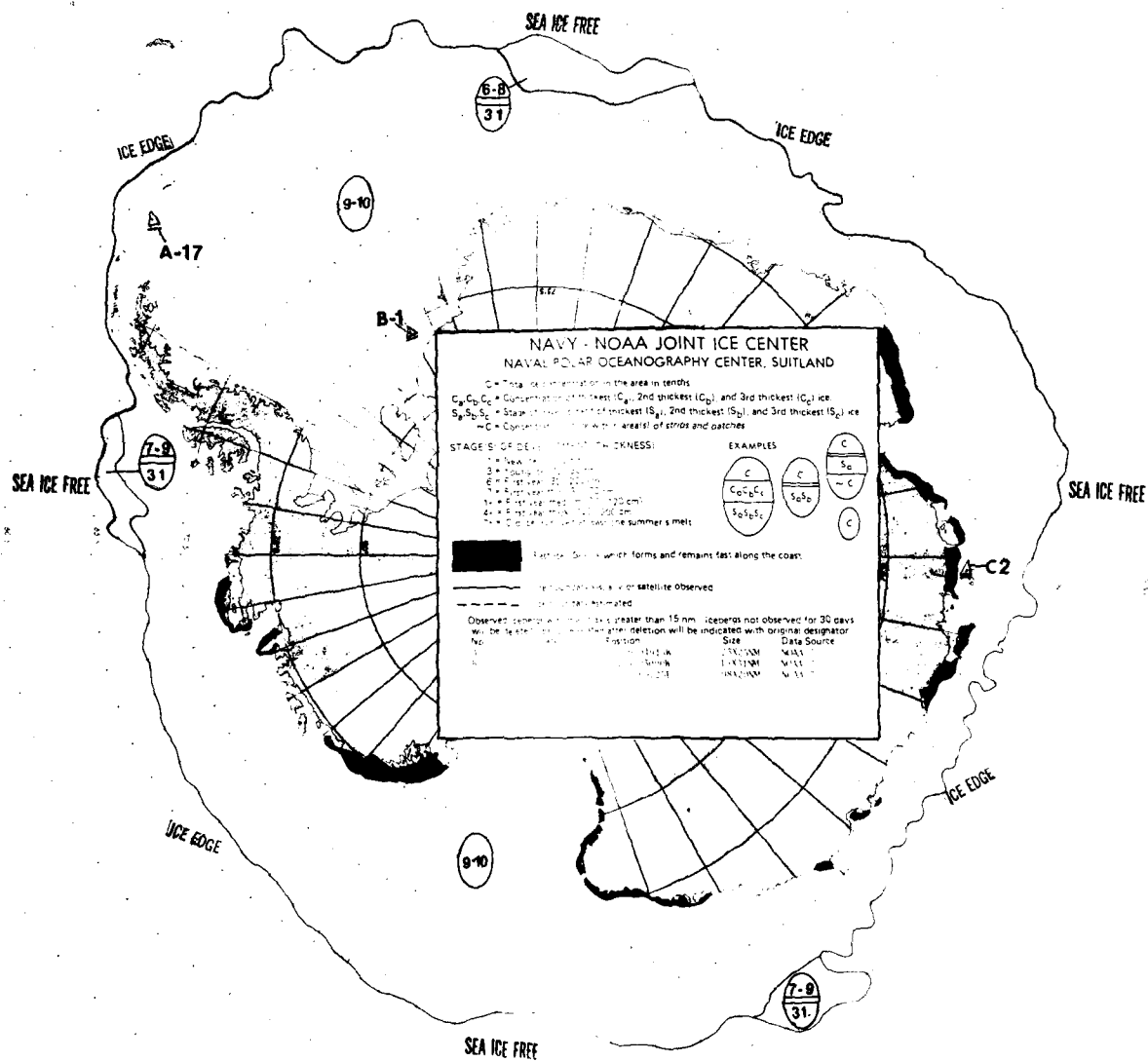
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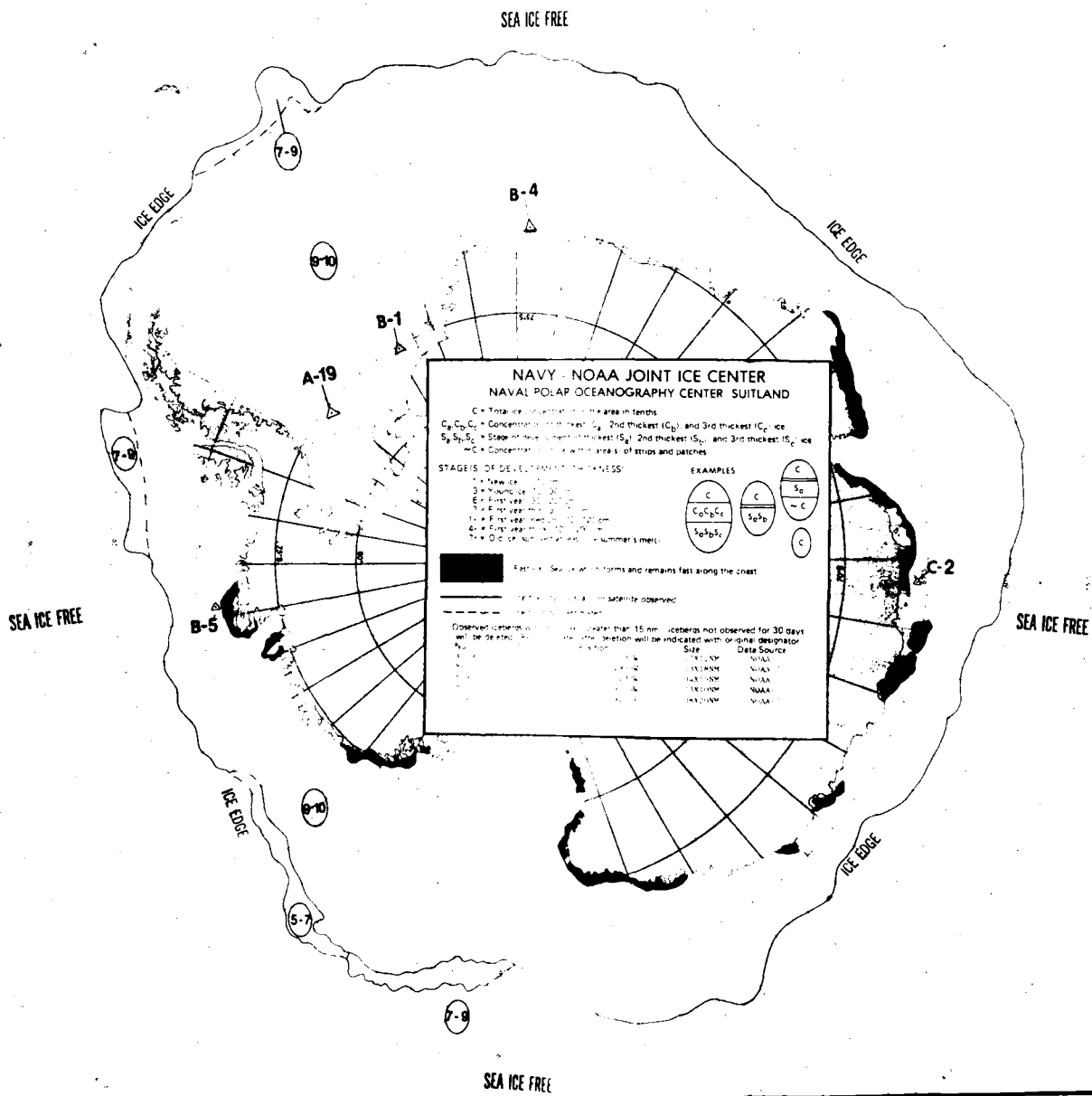
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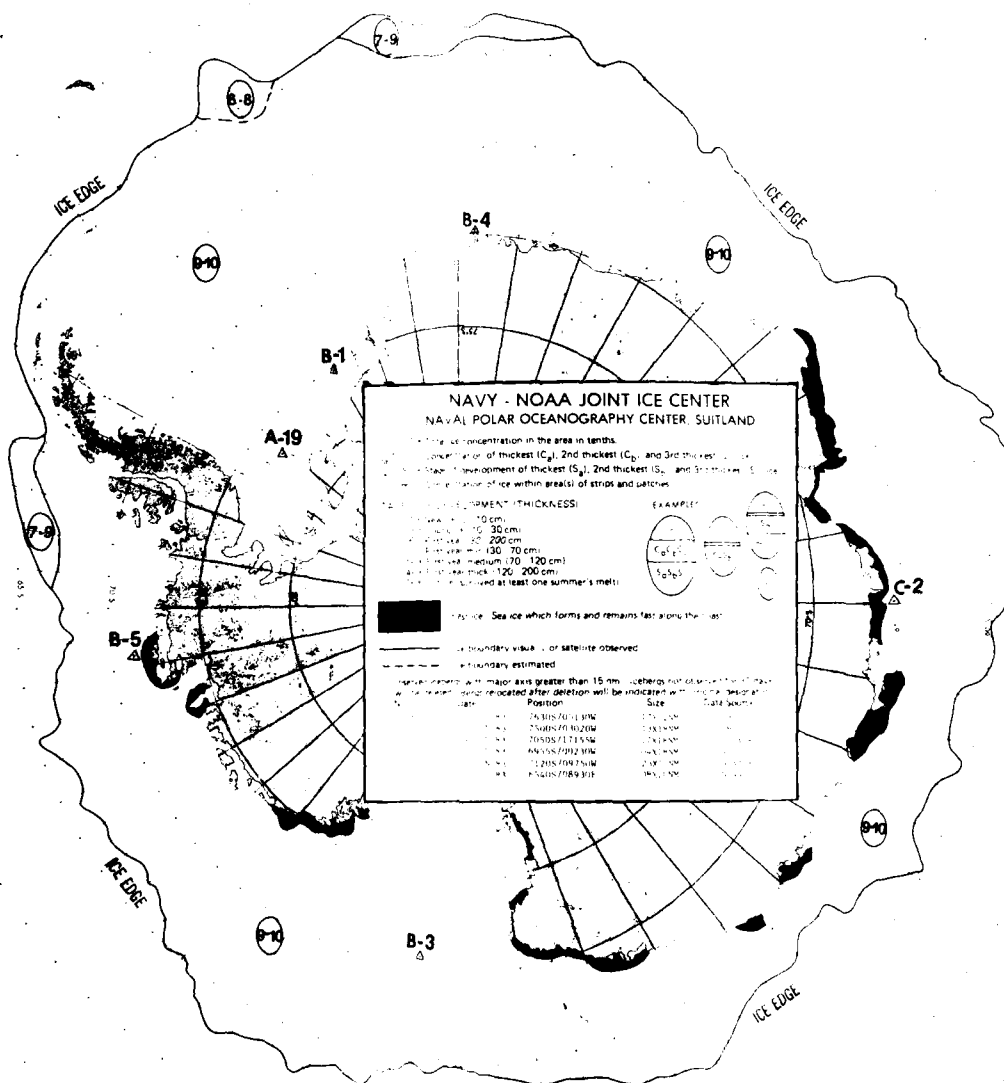
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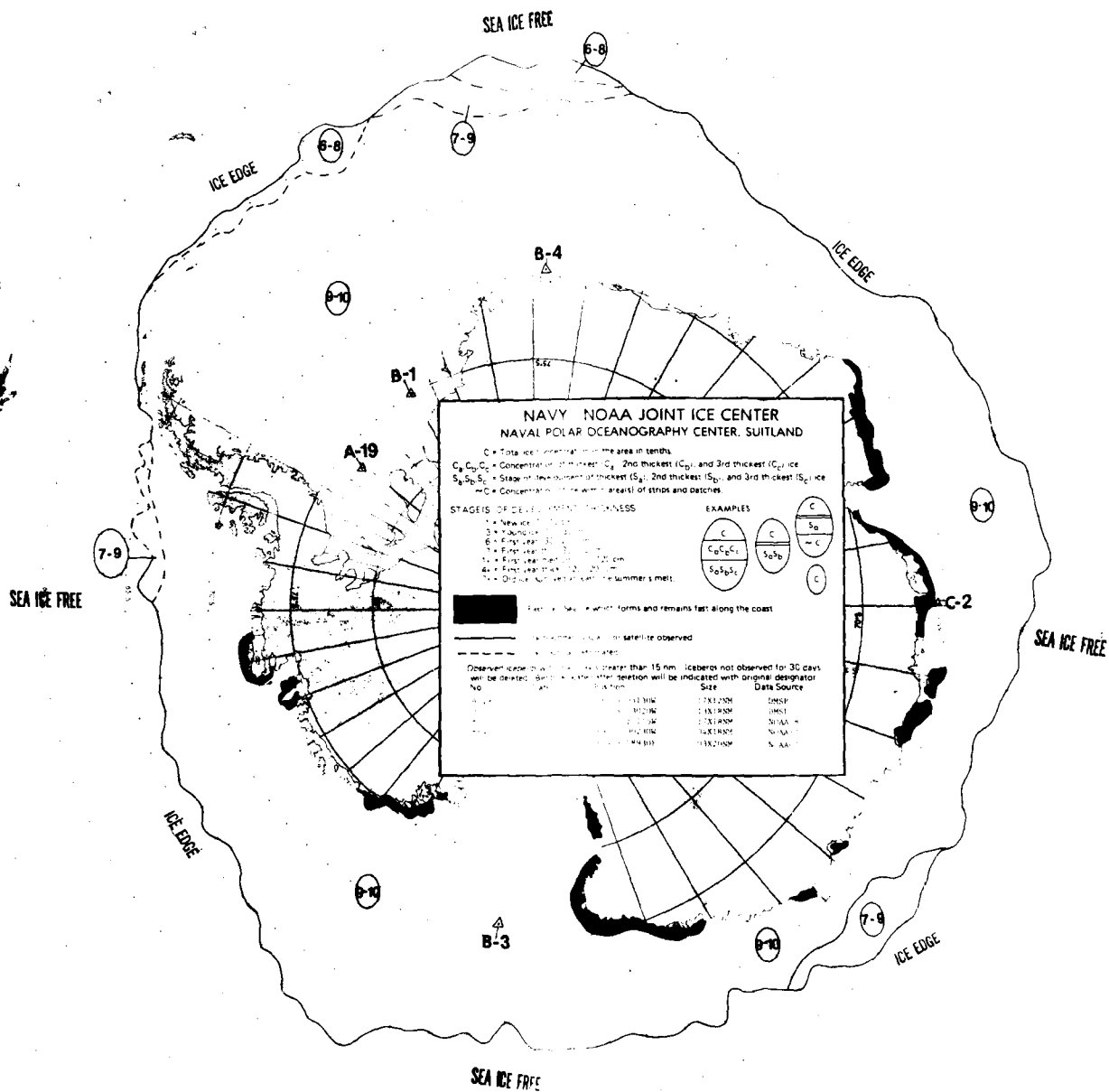
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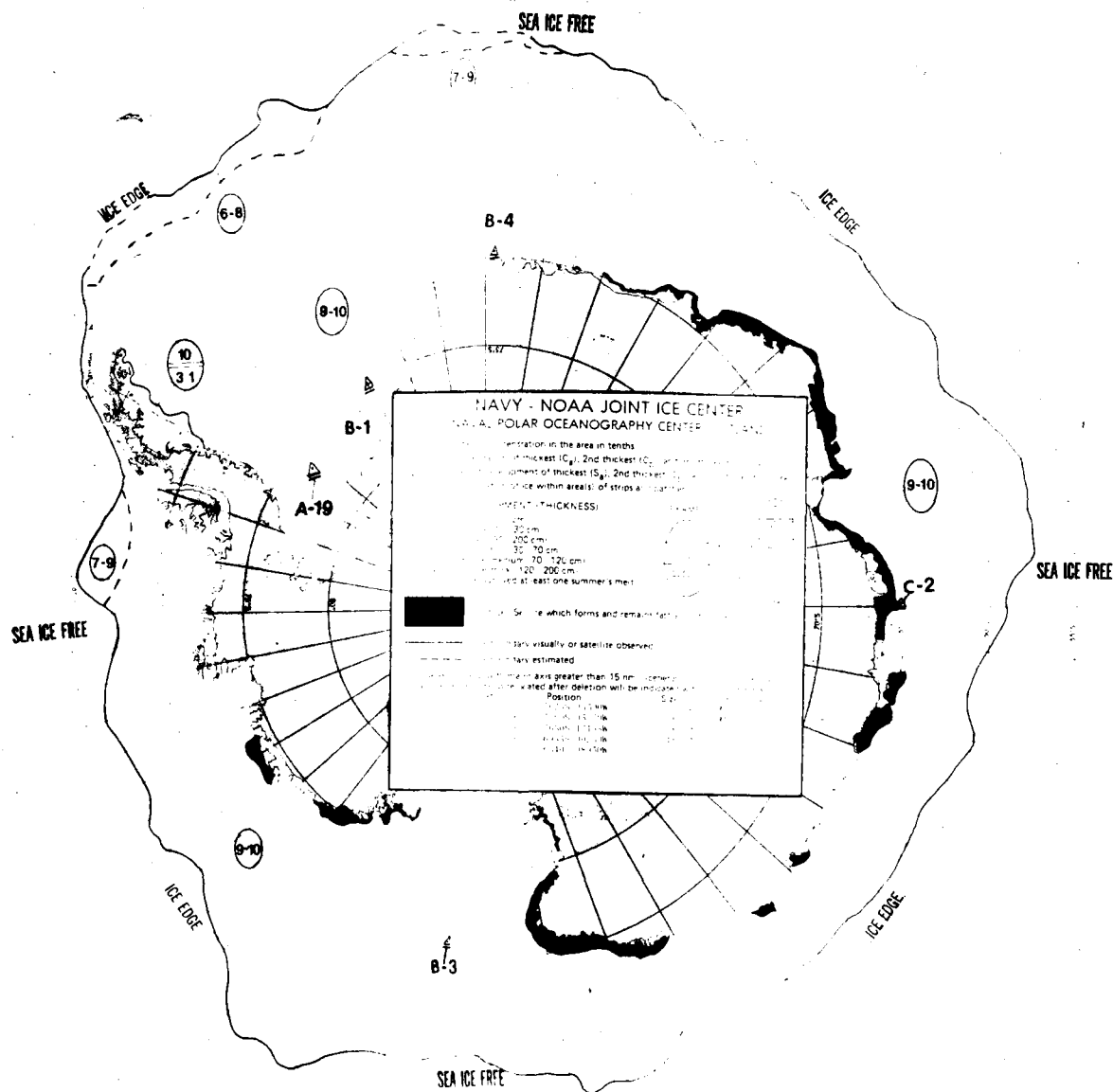
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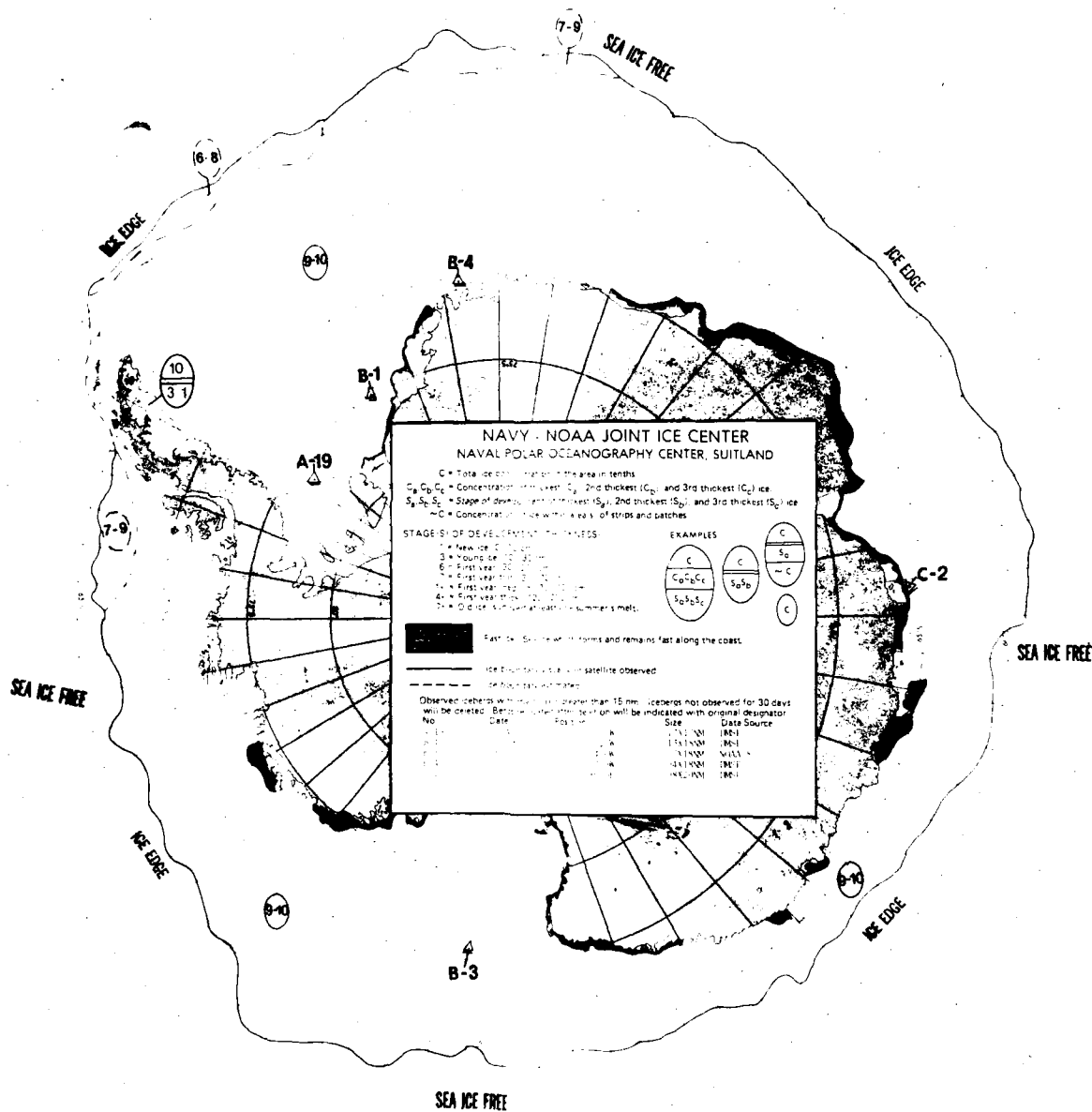


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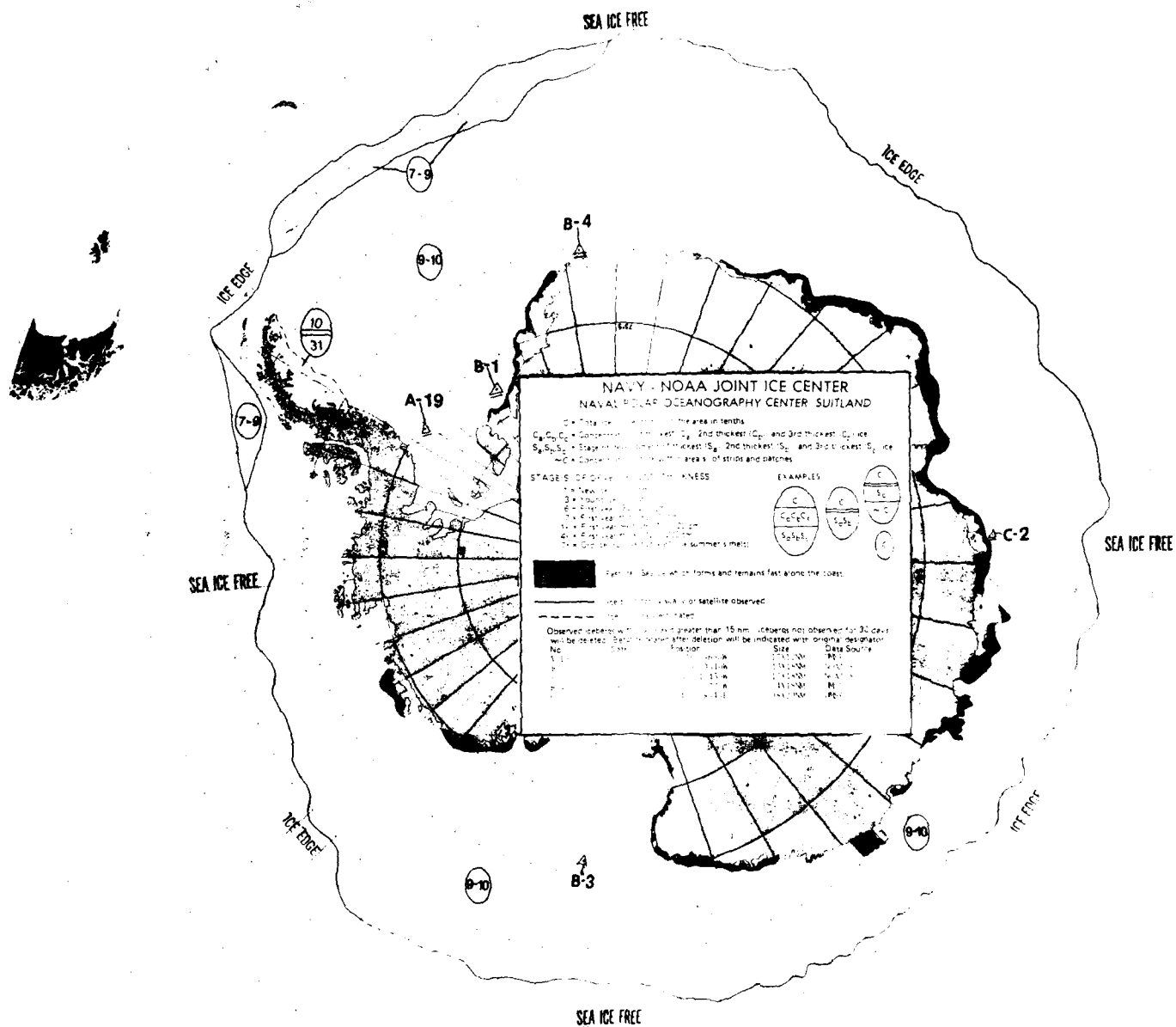


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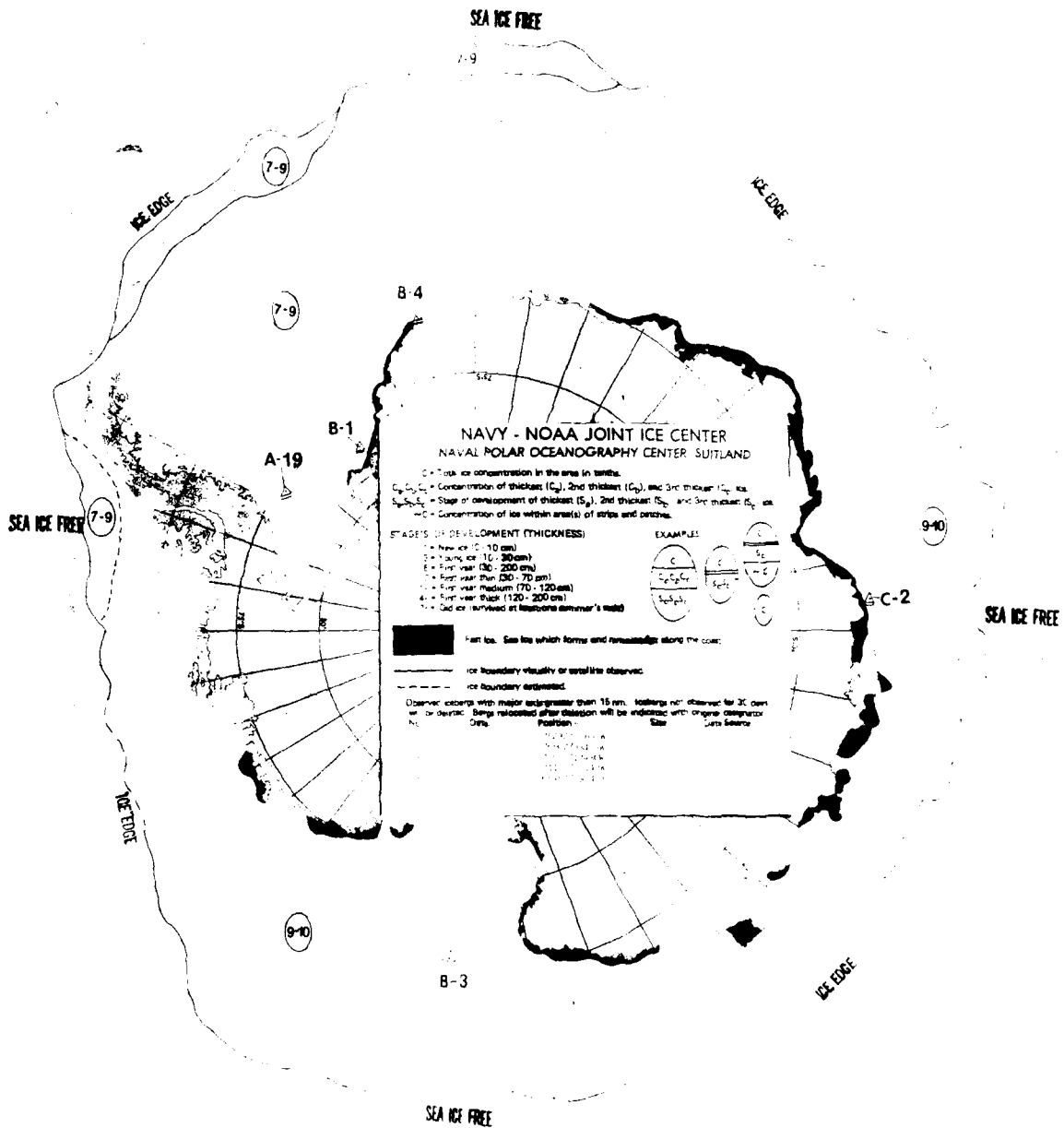
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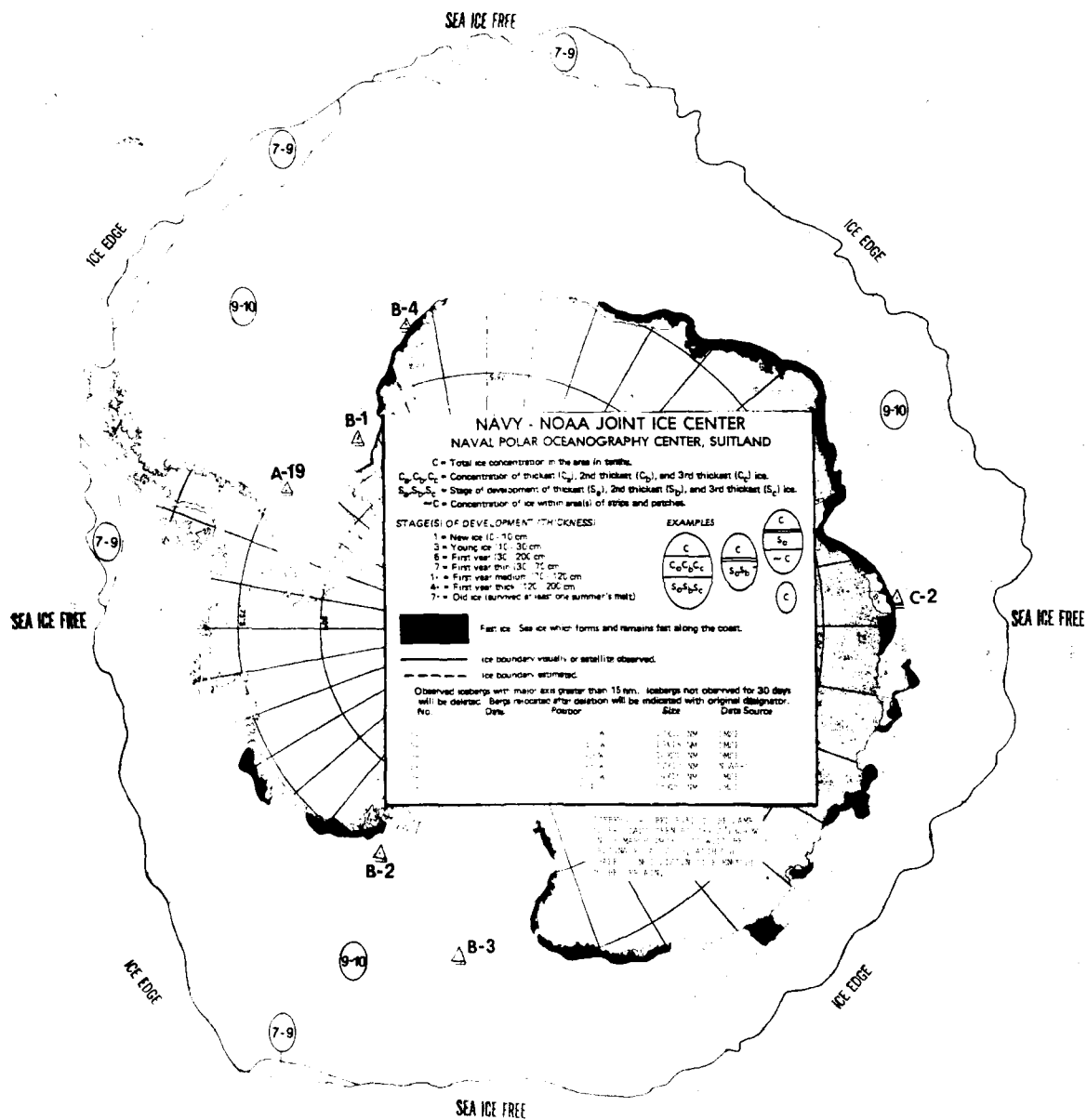
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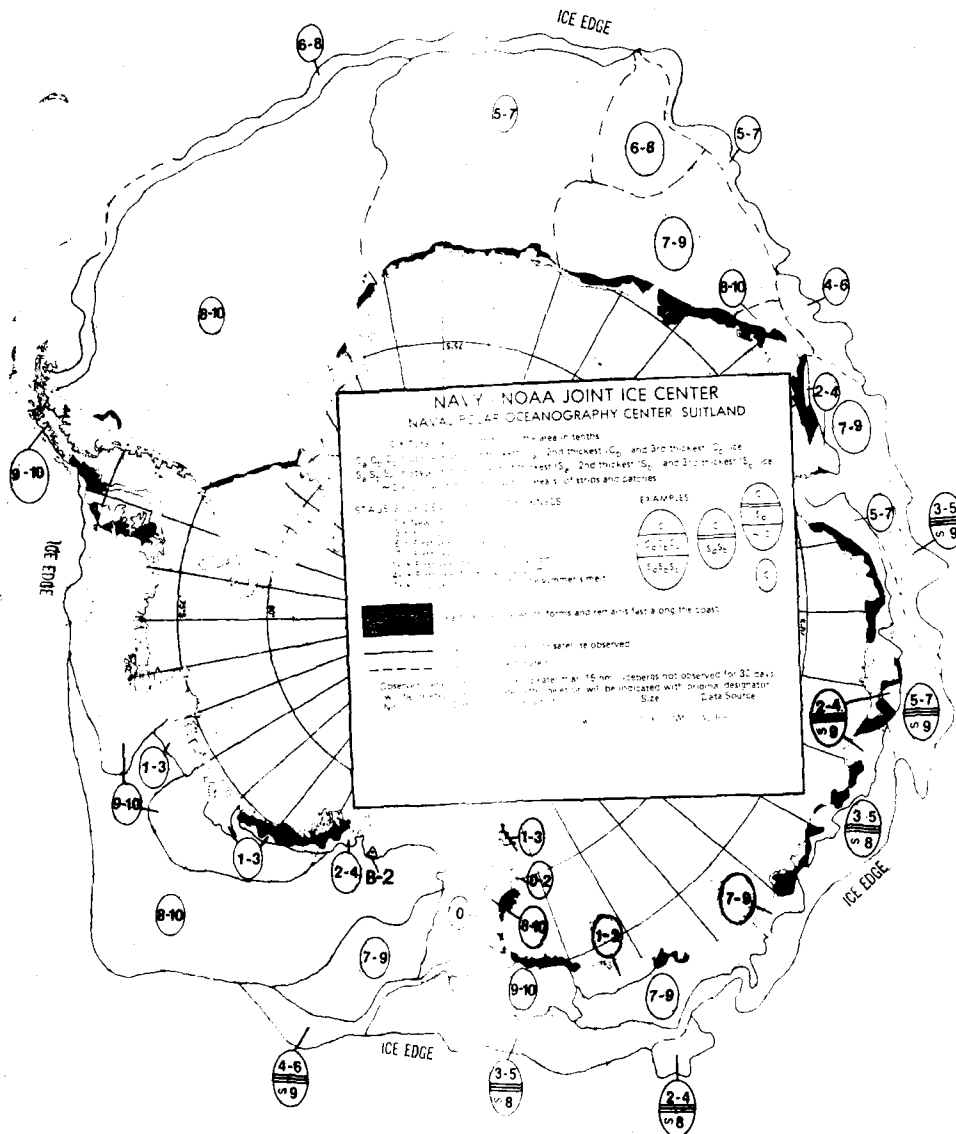
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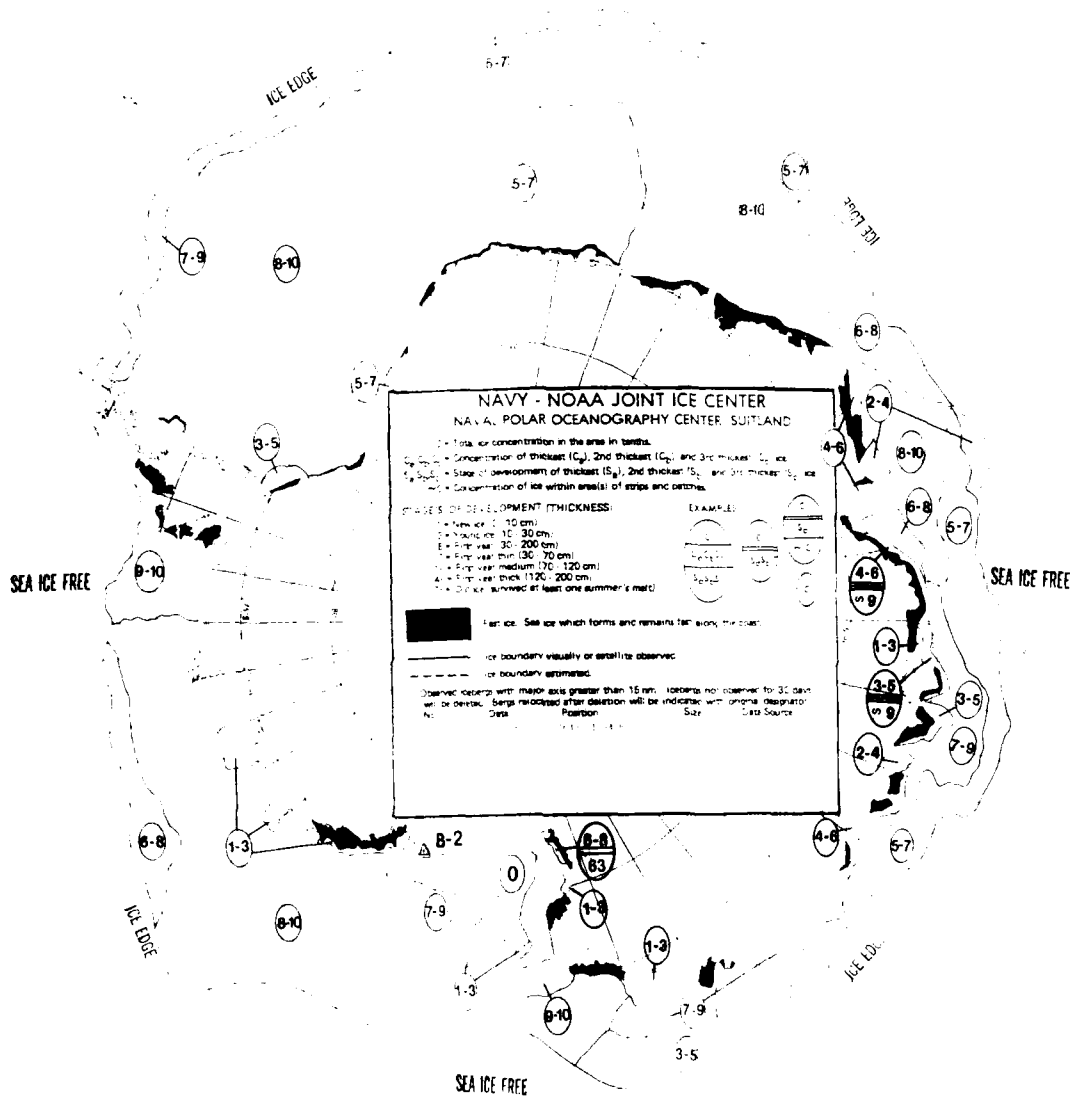
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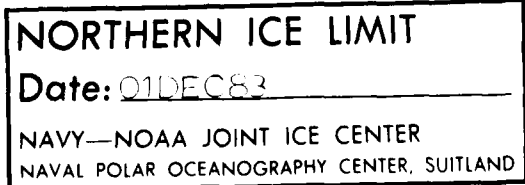


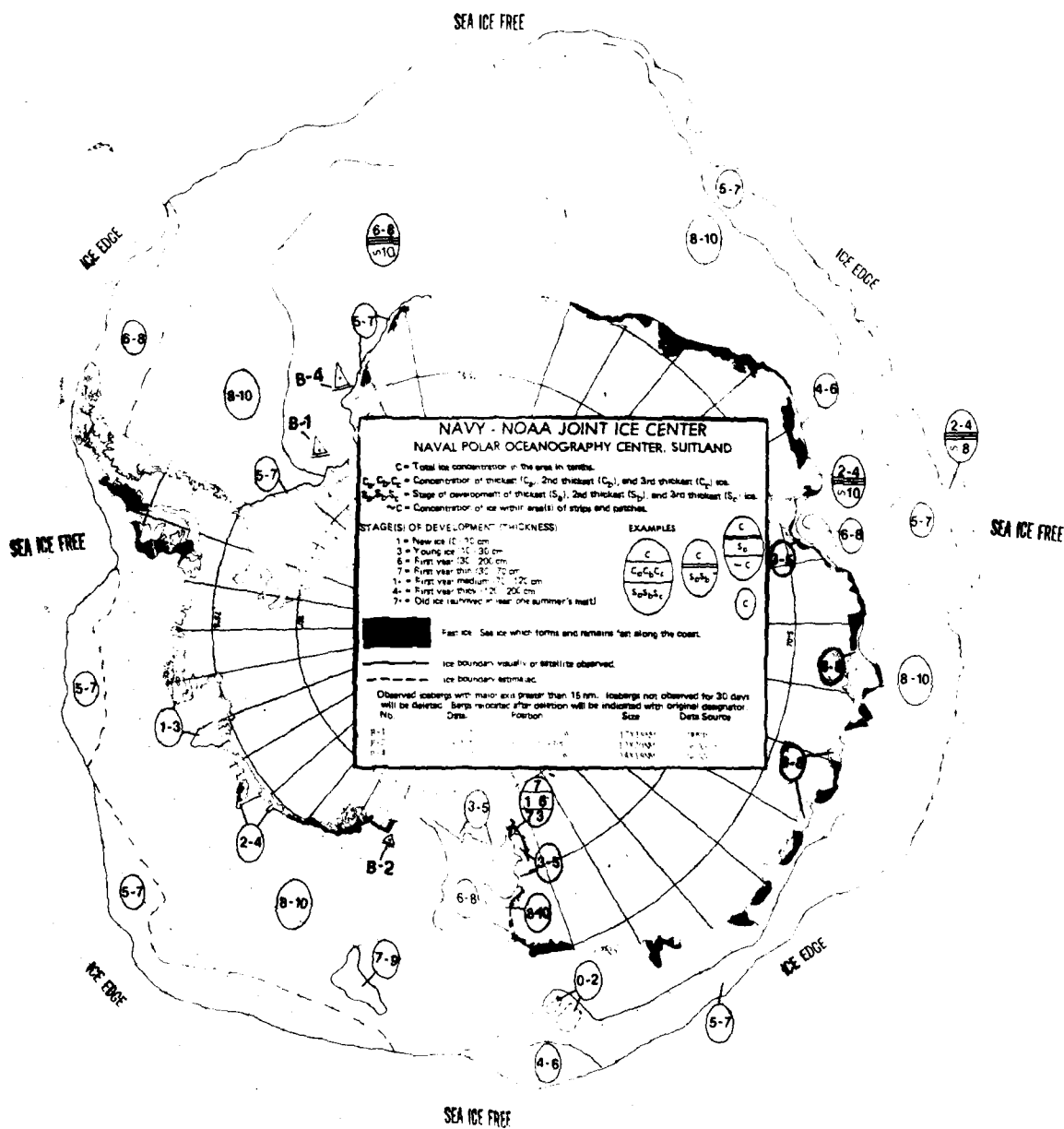
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Date: 15 DEC 83

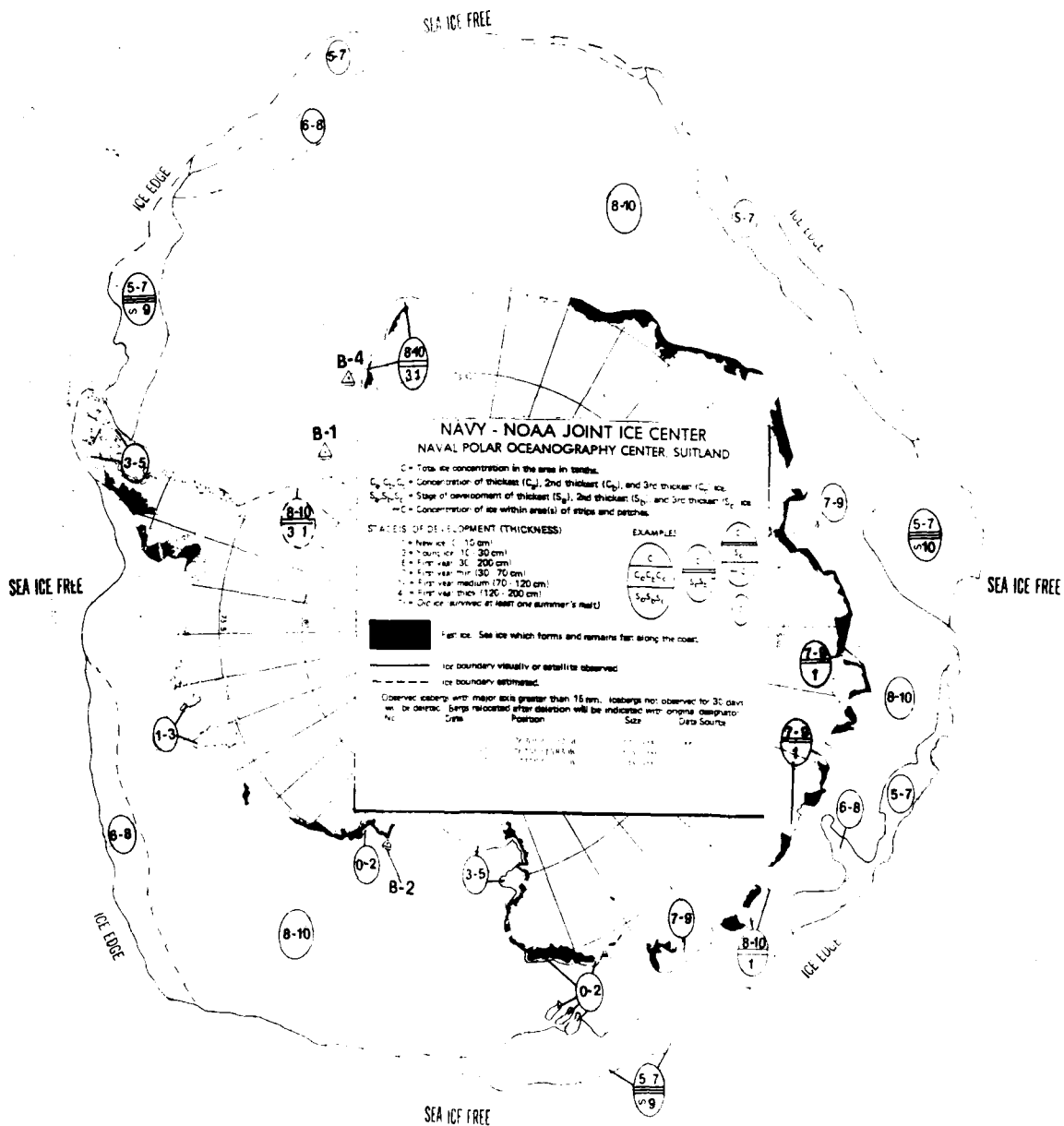
NAVY - NOAA JOINT ICE CENTER

NAVAL POLAR OCEANOGRAPHY CENTER, SUITLAND





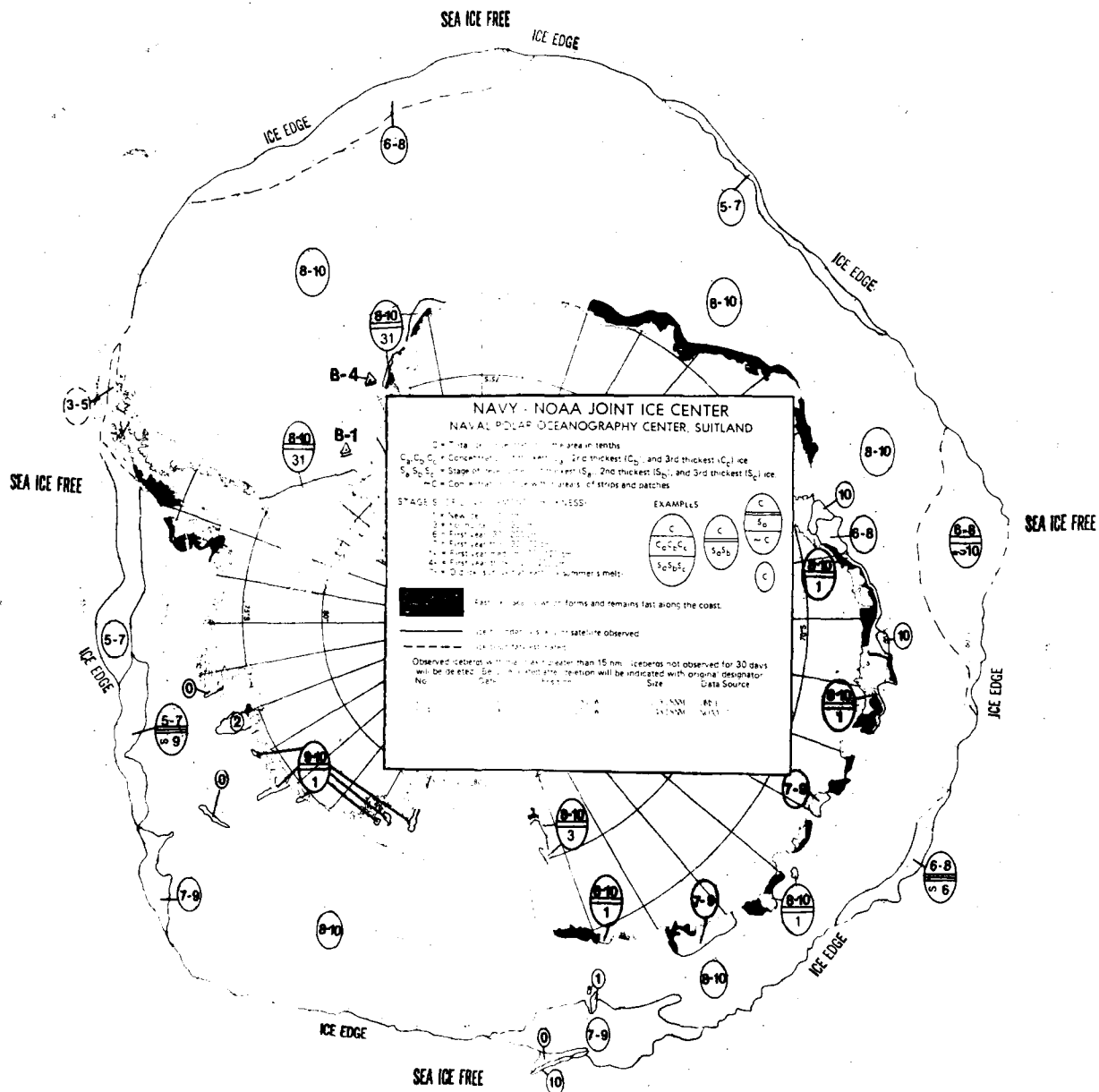
NORTHERN ICE LIMIT
Date: 17 NOV 83
 NAVY—NOAA JOINT ICE CENTER
 NAVAL POLAR OCEANOGRAPHY CENTER, SUITLAND



NORTHERN ICE LIMIT

Date: 10NOV 83

NAVY—NOAA JOINT ICE CENTER
 NAVAL POLAR OCEANOGRAPHY CENTER, SUITLAND



NORTHERN ICE LIMIT

Date: 03 NOV 83

NAVY—NOAA JOINT ICE CENTER
 NAVAL POLAR OCEANOGRAPHY CENTER, SUITLAND

SEA ICE FREE

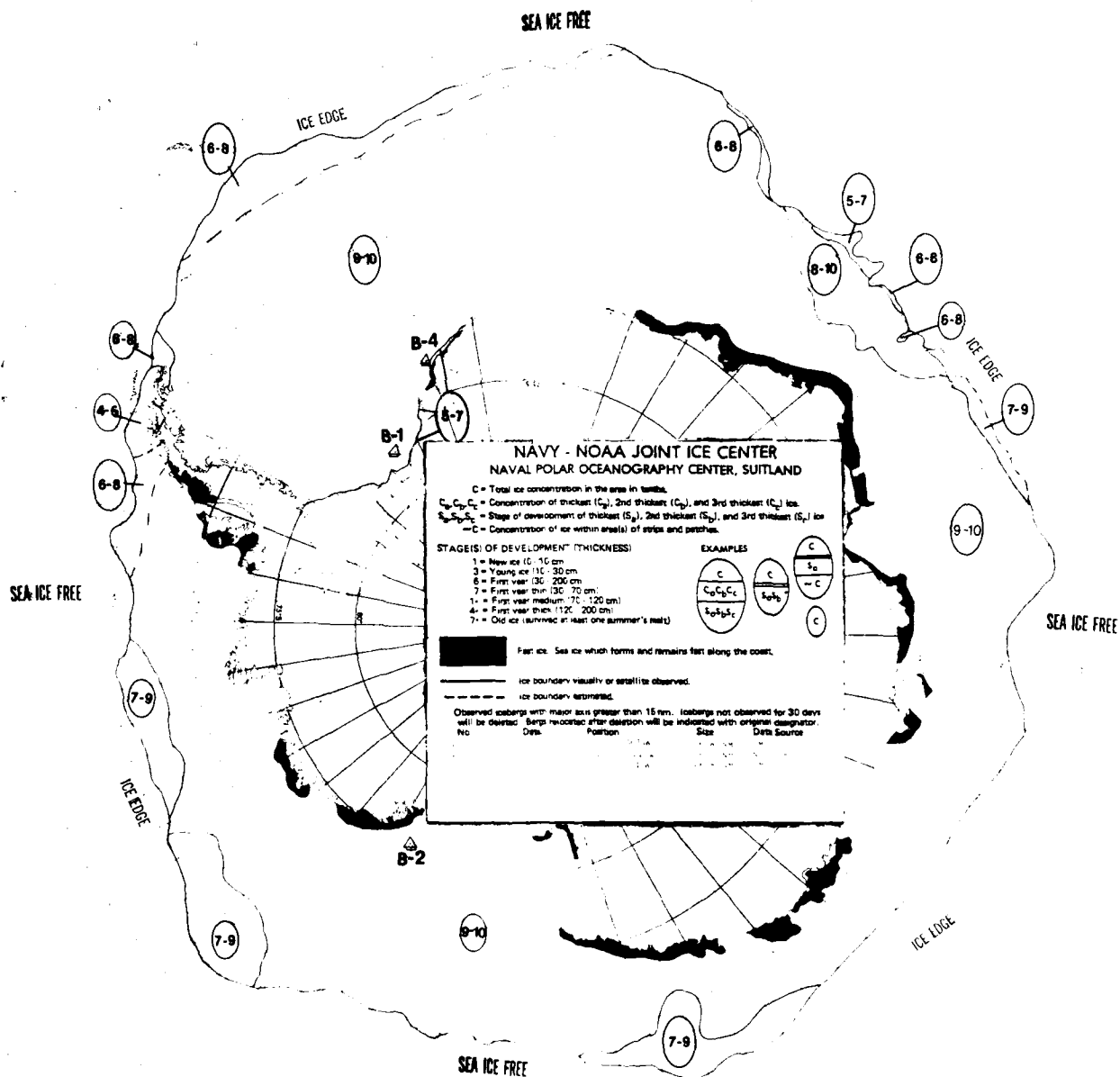


SEA ICE FREE

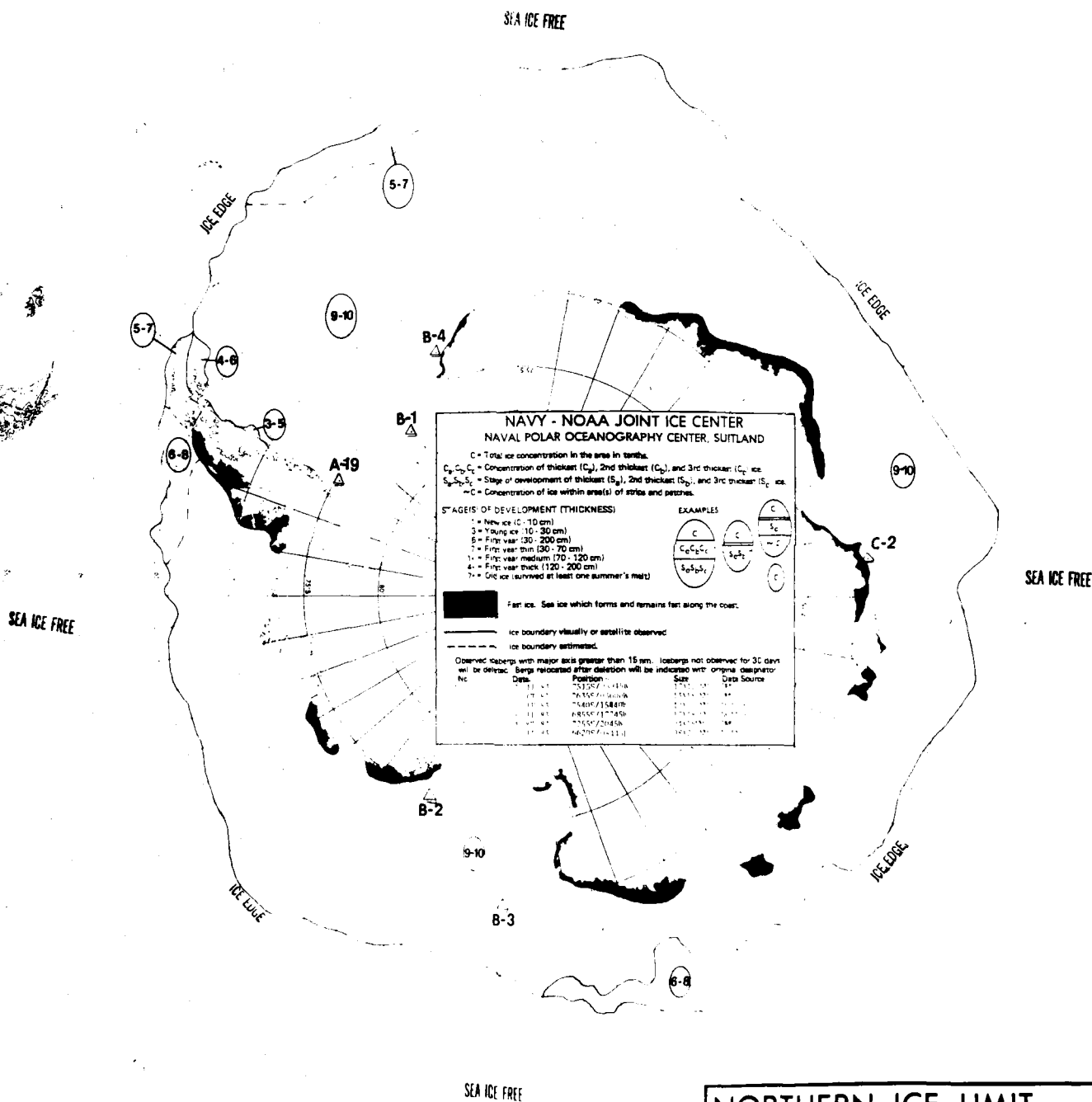
NORTHERN ICE LIMIT

Date: 11/1/83

NAVY NOAA JOINT ICE CENTER
NAVAL POLAR OCEANOGRAPHY CENTER SUITLAND



NORTHERN ICE LIMIT
Date: 20 OCT 83
NAVY—NOAA JOINT ICE CENTER
NAVAL POLAR OCEANOGRAPHY CENTER, SUITLAND



NORTHERN ICE LIMIT

Date: 15 OCT 83

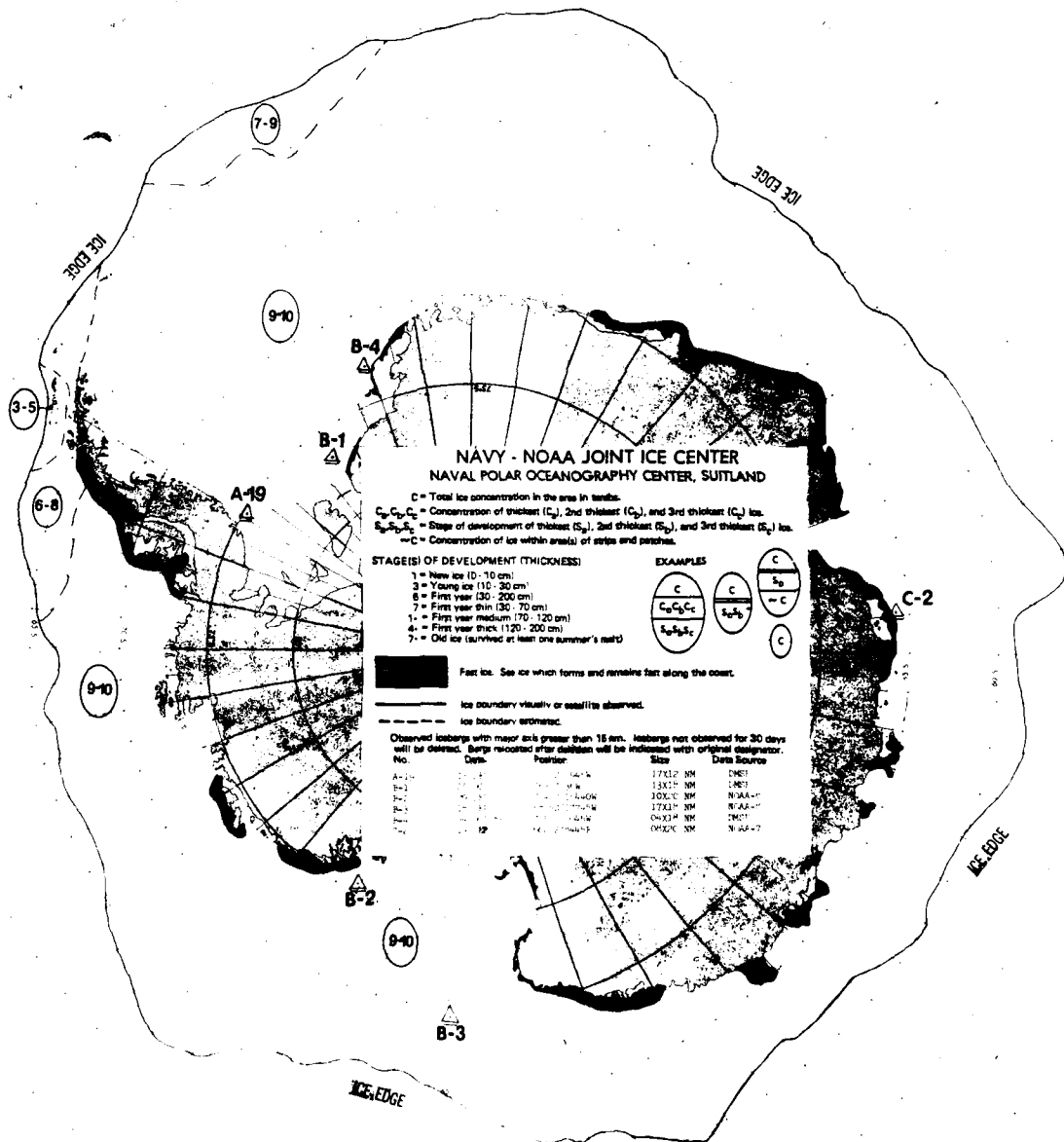
NAVY - NOAA JOINT ICE CENTER
 NAVAL POLAR OCEANOGRAPHY CENTER, SUITLAND

SEA ICE FREE

SEA ICE FREE

SEA ICE FREE

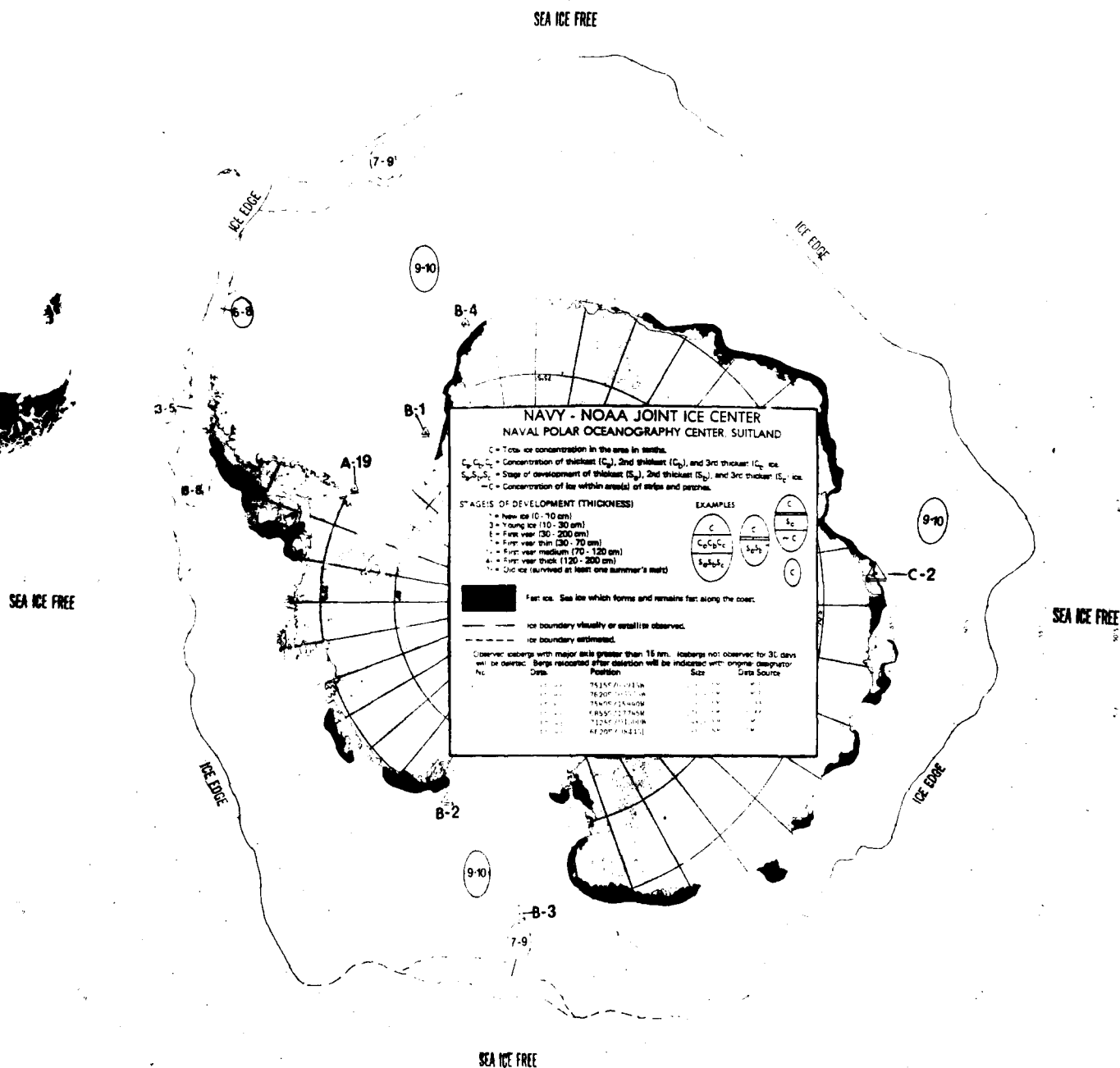
SEA ICE FREE



NORTHERN ICE LIMIT

Date: 06 OCT 83

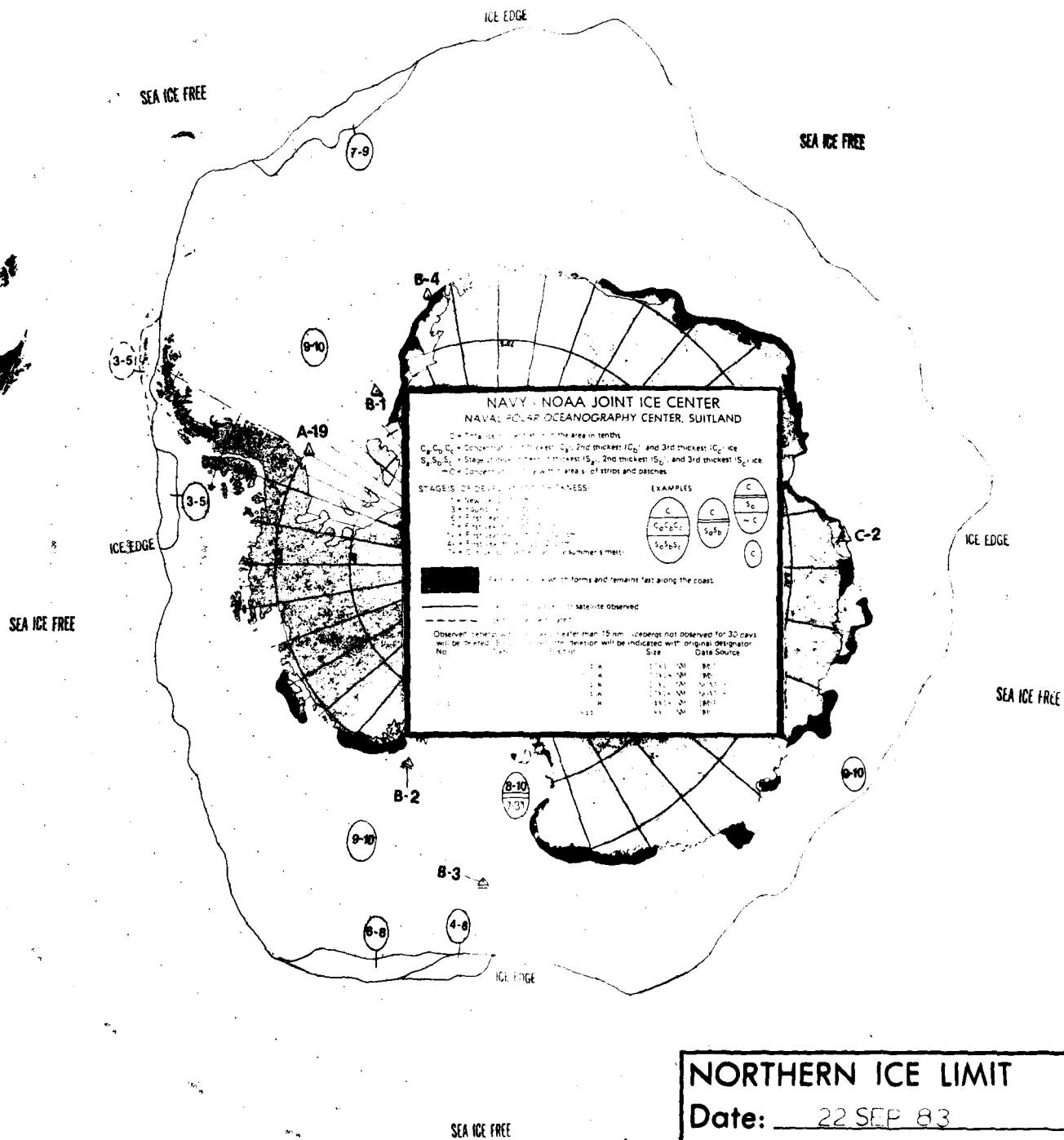
NAVY—NOAA JOINT ICE CENTER
 NAVAL POLAR OCEANOGRAPHY CENTER, SUITLAND



NORTHERN ICE LIMIT

Date: 29SEP83

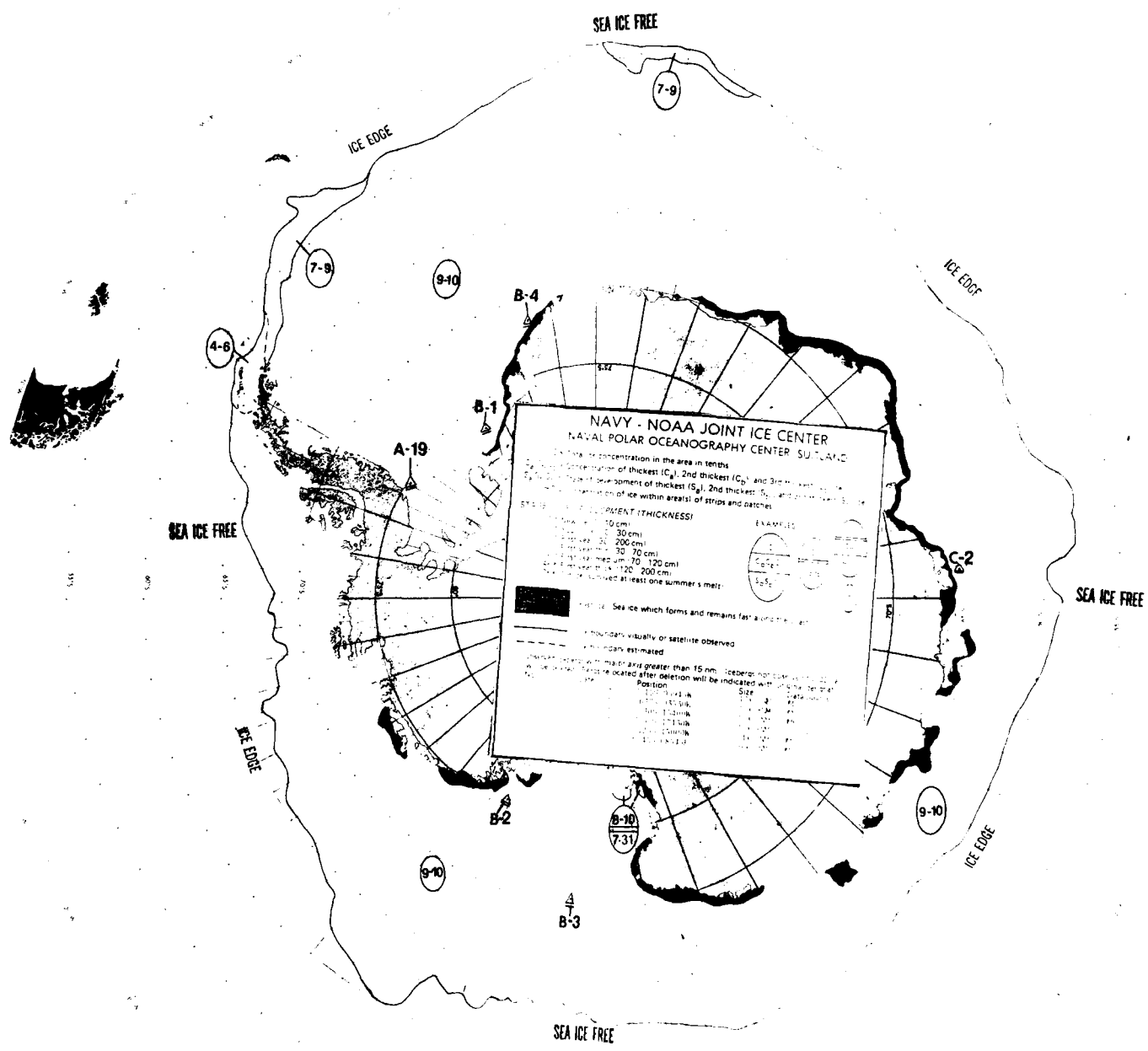
NAVY—NOAA JOINT ICE CENTER
 NAVAL POLAR OCEANOGRAPHY CENTER, SUITLAND



NORTHERN ICE LIMIT

Date: 22 SEP 83

NAVY—NOAA JOINT ICE CENTER
NAVAL POLAR OCEANOGRAPHY CENTER, SUITLAND



NAVY - NOAA JOINT ICE CENTER
NAVAL POLAR OCEANOGRAPHY CENTER, SUITLAND

Ice concentration in the area in tenths:
 1st thickest (C₁), 2nd thickest (C₂), and 3rd thickest (C₃).
 1st thickest (S₁), 2nd thickest (S₂), and 3rd thickest (S₃).
 1st thickest (A₁), 2nd thickest (A₂), and 3rd thickest (A₃).
 1st thickest (B₁), 2nd thickest (B₂), and 3rd thickest (B₃).
 1st thickest (D₁), 2nd thickest (D₂), and 3rd thickest (D₃).
 1st thickest (E₁), 2nd thickest (E₂), and 3rd thickest (E₃).
 1st thickest (F₁), 2nd thickest (F₂), and 3rd thickest (F₃).
 1st thickest (G₁), 2nd thickest (G₂), and 3rd thickest (G₃).
 1st thickest (H₁), 2nd thickest (H₂), and 3rd thickest (H₃).
 1st thickest (I₁), 2nd thickest (I₂), and 3rd thickest (I₃).
 1st thickest (J₁), 2nd thickest (J₂), and 3rd thickest (J₃).
 1st thickest (K₁), 2nd thickest (K₂), and 3rd thickest (K₃).
 1st thickest (L₁), 2nd thickest (L₂), and 3rd thickest (L₃).
 1st thickest (M₁), 2nd thickest (M₂), and 3rd thickest (M₃).
 1st thickest (N₁), 2nd thickest (N₂), and 3rd thickest (N₃).
 1st thickest (O₁), 2nd thickest (O₂), and 3rd thickest (O₃).
 1st thickest (P₁), 2nd thickest (P₂), and 3rd thickest (P₃).
 1st thickest (Q₁), 2nd thickest (Q₂), and 3rd thickest (Q₃).
 1st thickest (R₁), 2nd thickest (R₂), and 3rd thickest (R₃).
 1st thickest (S₁), 2nd thickest (S₂), and 3rd thickest (S₃).
 1st thickest (T₁), 2nd thickest (T₂), and 3rd thickest (T₃).
 1st thickest (U₁), 2nd thickest (U₂), and 3rd thickest (U₃).
 1st thickest (V₁), 2nd thickest (V₂), and 3rd thickest (V₃).
 1st thickest (W₁), 2nd thickest (W₂), and 3rd thickest (W₃).
 1st thickest (X₁), 2nd thickest (X₂), and 3rd thickest (X₃).
 1st thickest (Y₁), 2nd thickest (Y₂), and 3rd thickest (Y₃).
 1st thickest (Z₁), 2nd thickest (Z₂), and 3rd thickest (Z₃).

STRENGTH OF ICE (THICKNESS)

1st thickest (C₁), 2nd thickest (C₂), and 3rd thickest (C₃).
 1st thickest (S₁), 2nd thickest (S₂), and 3rd thickest (S₃).
 1st thickest (A₁), 2nd thickest (A₂), and 3rd thickest (A₃).
 1st thickest (B₁), 2nd thickest (B₂), and 3rd thickest (B₃).
 1st thickest (D₁), 2nd thickest (D₂), and 3rd thickest (D₃).
 1st thickest (E₁), 2nd thickest (E₂), and 3rd thickest (E₃).
 1st thickest (F₁), 2nd thickest (F₂), and 3rd thickest (F₃).
 1st thickest (G₁), 2nd thickest (G₂), and 3rd thickest (G₃).
 1st thickest (H₁), 2nd thickest (H₂), and 3rd thickest (H₃).
 1st thickest (I₁), 2nd thickest (I₂), and 3rd thickest (I₃).
 1st thickest (J₁), 2nd thickest (J₂), and 3rd thickest (J₃).
 1st thickest (K₁), 2nd thickest (K₂), and 3rd thickest (K₃).
 1st thickest (L₁), 2nd thickest (L₂), and 3rd thickest (L₃).
 1st thickest (M₁), 2nd thickest (M₂), and 3rd thickest (M₃).
 1st thickest (N₁), 2nd thickest (N₂), and 3rd thickest (N₃).
 1st thickest (O₁), 2nd thickest (O₂), and 3rd thickest (O₃).
 1st thickest (P₁), 2nd thickest (P₂), and 3rd thickest (P₃).
 1st thickest (Q₁), 2nd thickest (Q₂), and 3rd thickest (Q₃).
 1st thickest (R₁), 2nd thickest (R₂), and 3rd thickest (R₃).
 1st thickest (S₁), 2nd thickest (S₂), and 3rd thickest (S₃).
 1st thickest (T₁), 2nd thickest (T₂), and 3rd thickest (T₃).
 1st thickest (U₁), 2nd thickest (U₂), and 3rd thickest (U₃).
 1st thickest (V₁), 2nd thickest (V₂), and 3rd thickest (V₃).
 1st thickest (W₁), 2nd thickest (W₂), and 3rd thickest (W₃).
 1st thickest (X₁), 2nd thickest (X₂), and 3rd thickest (X₃).
 1st thickest (Y₁), 2nd thickest (Y₂), and 3rd thickest (Y₃).
 1st thickest (Z₁), 2nd thickest (Z₂), and 3rd thickest (Z₃).

EXAMPLES

1st thickest (C₁), 2nd thickest (C₂), and 3rd thickest (C₃).
 1st thickest (S₁), 2nd thickest (S₂), and 3rd thickest (S₃).
 1st thickest (A₁), 2nd thickest (A₂), and 3rd thickest (A₃).
 1st thickest (B₁), 2nd thickest (B₂), and 3rd thickest (B₃).
 1st thickest (D₁), 2nd thickest (D₂), and 3rd thickest (D₃).
 1st thickest (E₁), 2nd thickest (E₂), and 3rd thickest (E₃).
 1st thickest (F₁), 2nd thickest (F₂), and 3rd thickest (F₃).
 1st thickest (G₁), 2nd thickest (G₂), and 3rd thickest (G₃).
 1st thickest (H₁), 2nd thickest (H₂), and 3rd thickest (H₃).
 1st thickest (I₁), 2nd thickest (I₂), and 3rd thickest (I₃).
 1st thickest (J₁), 2nd thickest (J₂), and 3rd thickest (J₃).
 1st thickest (K₁), 2nd thickest (K₂), and 3rd thickest (K₃).
 1st thickest (L₁), 2nd thickest (L₂), and 3rd thickest (L₃).
 1st thickest (M₁), 2nd thickest (M₂), and 3rd thickest (M₃).
 1st thickest (N₁), 2nd thickest (N₂), and 3rd thickest (N₃).
 1st thickest (O₁), 2nd thickest (O₂), and 3rd thickest (O₃).
 1st thickest (P₁), 2nd thickest (P₂), and 3rd thickest (P₃).
 1st thickest (Q₁), 2nd thickest (Q₂), and 3rd thickest (Q₃).
 1st thickest (R₁), 2nd thickest (R₂), and 3rd thickest (R₃).
 1st thickest (S₁), 2nd thickest (S₂), and 3rd thickest (S₃).
 1st thickest (T₁), 2nd thickest (T₂), and 3rd thickest (T₃).
 1st thickest (U₁), 2nd thickest (U₂), and 3rd thickest (U₃).
 1st thickest (V₁), 2nd thickest (V₂), and 3rd thickest (V₃).
 1st thickest (W₁), 2nd thickest (W₂), and 3rd thickest (W₃).
 1st thickest (X₁), 2nd thickest (X₂), and 3rd thickest (X₃).
 1st thickest (Y₁), 2nd thickest (Y₂), and 3rd thickest (Y₃).
 1st thickest (Z₁), 2nd thickest (Z₂), and 3rd thickest (Z₃).

Legend

- Sea ice which forms and remains fast along the coast.
- Boundaries visually or satellite observed.
- Boundaries estimated.

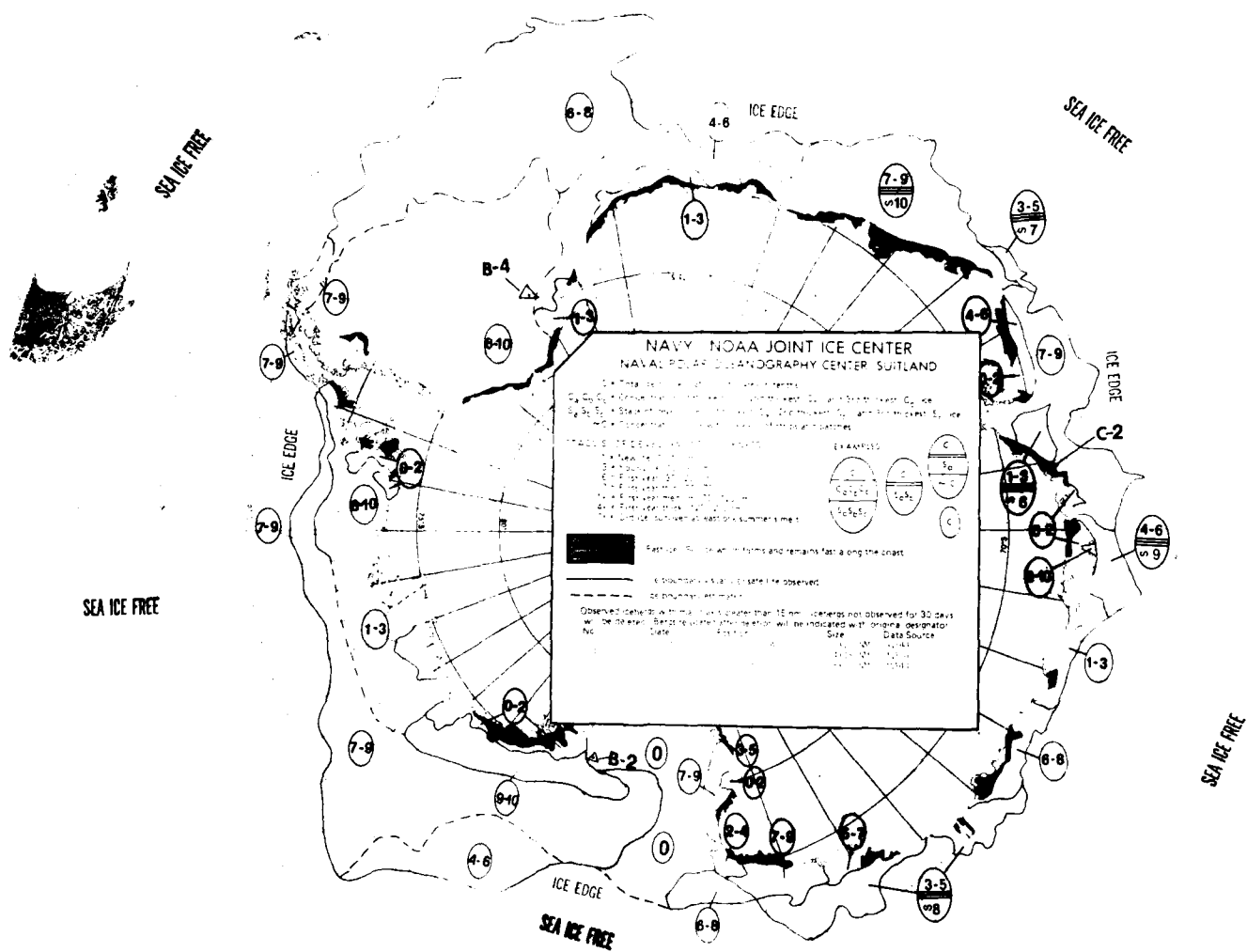
Notes

- Icebergs with main axis greater than 15 nm. Icebergs not shown.
- Icebergs shown are located after deletion will be indicated with a circle.

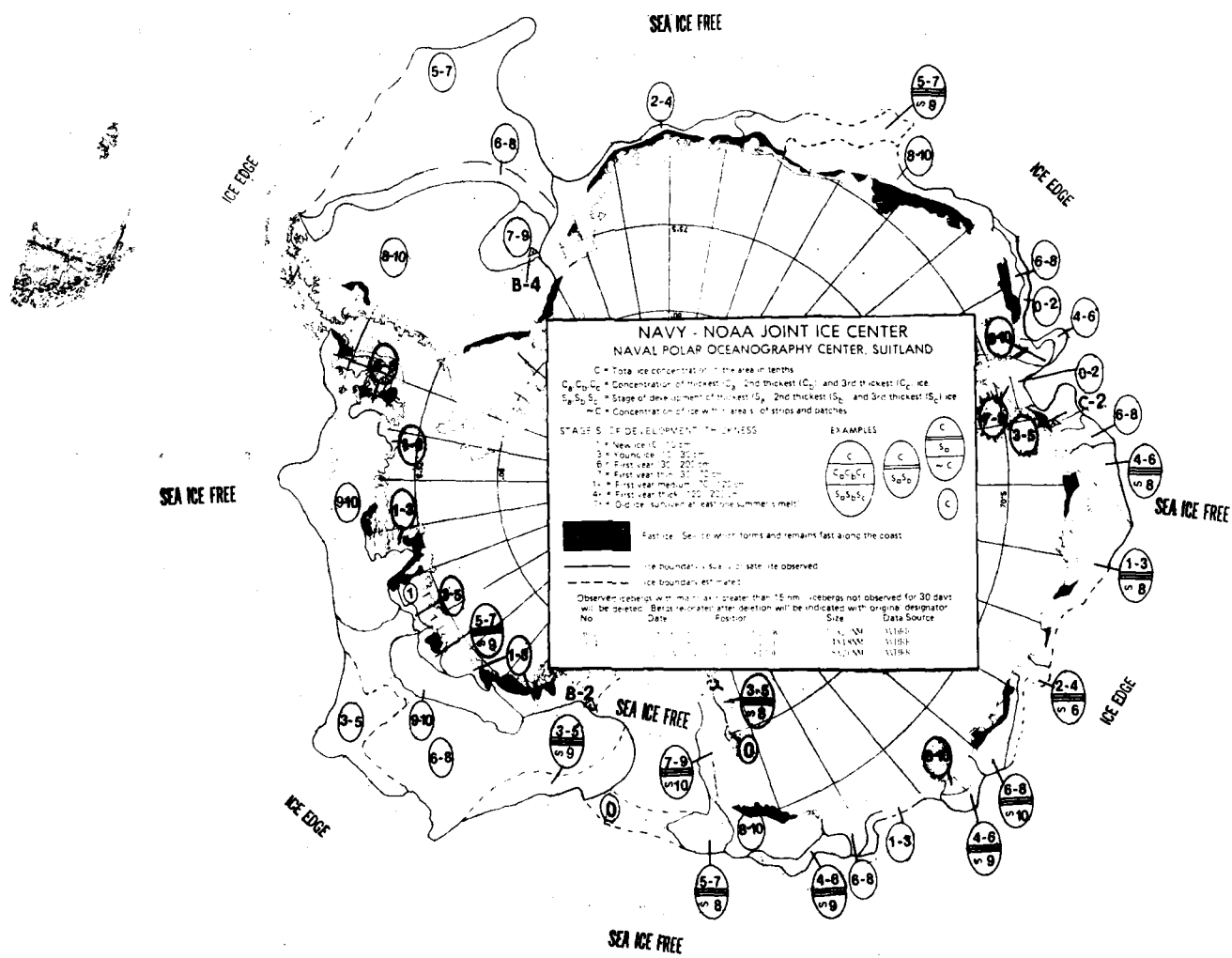
Position

Position	Size
1st thickest (C ₁)	1st thickest (C ₁)
2nd thickest (C ₂)	2nd thickest (C ₂)
3rd thickest (C ₃)	3rd thickest (C ₃)
1st thickest (S ₁)	1st thickest (S ₁)
2nd thickest (S ₂)	2nd thickest (S ₂)
3rd thickest (S ₃)	3rd thickest (S ₃)
1st thickest (A ₁)	1st thickest (A ₁)
2nd thickest (A ₂)	2nd thickest (A ₂)
3rd thickest (A ₃)	3rd thickest (A ₃)
1st thickest (B ₁)	1st thickest (B ₁)
2nd thickest (B ₂)	2nd thickest (B ₂)
3rd thickest (B ₃)	3rd thickest (B ₃)
1st thickest (D ₁)	1st thickest (D ₁)
2nd thickest (D ₂)	2nd thickest (D ₂)
3rd thickest (D ₃)	3rd thickest (D ₃)
1st thickest (E ₁)	1st thickest (E ₁)
2nd thickest (E ₂)	2nd thickest (E ₂)
3rd thickest (E ₃)	3rd thickest (E ₃)
1st thickest (F ₁)	1st thickest (F ₁)
2nd thickest (F ₂)	2nd thickest (F ₂)
3rd thickest (F ₃)	3rd thickest (F ₃)
1st thickest (G ₁)	1st thickest (G ₁)
2nd thickest (G ₂)	2nd thickest (G ₂)
3rd thickest (G ₃)	3rd thickest (G ₃)
1st thickest (H ₁)	1st thickest (H ₁)
2nd thickest (H ₂)	2nd thickest (H ₂)
3rd thickest (H ₃)	3rd thickest (H ₃)
1st thickest (I ₁)	1st thickest (I ₁)
2nd thickest (I ₂)	2nd thickest (I ₂)
3rd thickest (I ₃)	3rd thickest (I ₃)
1st thickest (J ₁)	1st thickest (J ₁)
2nd thickest (J ₂)	2nd thickest (J ₂)
3rd thickest (J ₃)	3rd thickest (J ₃)
1st thickest (K ₁)	1st thickest (K ₁)
2nd thickest (K ₂)	2nd thickest (K ₂)
3rd thickest (K ₃)	3rd thickest (K ₃)
1st thickest (L ₁)	1st thickest (L ₁)
2nd thickest (L ₂)	2nd thickest (L ₂)
3rd thickest (L ₃)	3rd thickest (L ₃)
1st thickest (M ₁)	1st thickest (M ₁)
2nd thickest (M ₂)	2nd thickest (M ₂)
3rd thickest (M ₃)	3rd thickest (M ₃)
1st thickest (N ₁)	1st thickest (N ₁)
2nd thickest (N ₂)	2nd thickest (N ₂)
3rd thickest (N ₃)	3rd thickest (N ₃)
1st thickest (O ₁)	1st thickest (O ₁)
2nd thickest (O ₂)	2nd thickest (O ₂)
3rd thickest (O ₃)	3rd thickest (O ₃)
1st thickest (P ₁)	1st thickest (P ₁)
2nd thickest (P ₂)	2nd thickest (P ₂)
3rd thickest (P ₃)	3rd thickest (P ₃)
1st thickest (Q ₁)	1st thickest (Q ₁)
2nd thickest (Q ₂)	2nd thickest (Q ₂)
3rd thickest (Q ₃)	3rd thickest (Q ₃)
1st thickest (R ₁)	1st thickest (R ₁)
2nd thickest (R ₂)	2nd thickest (R ₂)
3rd thickest (R ₃)	3rd thickest (R ₃)
1st thickest (S ₁)	1st thickest (S ₁)
2nd thickest (S ₂)	2nd thickest (S ₂)
3rd thickest (S ₃)	3rd thickest (S ₃)
1st thickest (T ₁)	1st thickest (T ₁)
2nd thickest (T ₂)	2nd thickest (T ₂)
3rd thickest (T ₃)	3rd thickest (T ₃)
1st thickest (U ₁)	1st thickest (U ₁)
2nd thickest (U ₂)	2nd thickest (U ₂)
3rd thickest (U ₃)	3rd thickest (U ₃)
1st thickest (V ₁)	1st thickest (V ₁)
2nd thickest (V ₂)	2nd thickest (V ₂)
3rd thickest (V ₃)	3rd thickest (V ₃)
1st thickest (W ₁)	1st thickest (W ₁)
2nd thickest (W ₂)	2nd thickest (W ₂)
3rd thickest (W ₃)	3rd thickest (W ₃)
1st thickest (X ₁)	1st thickest (X ₁)
2nd thickest (X ₂)	2nd thickest (X ₂)
3rd thickest (X ₃)	3rd thickest (X ₃)
1st thickest (Y ₁)	1st thickest (Y ₁)
2nd thickest (Y ₂)	2nd thickest (Y ₂)
3rd thickest (Y ₃)	3rd thickest (Y ₃)
1st thickest (Z ₁)	1st thickest (Z ₁)
2nd thickest (Z ₂)	2nd thickest (Z ₂)
3rd thickest (Z ₃)	3rd thickest (Z ₃)

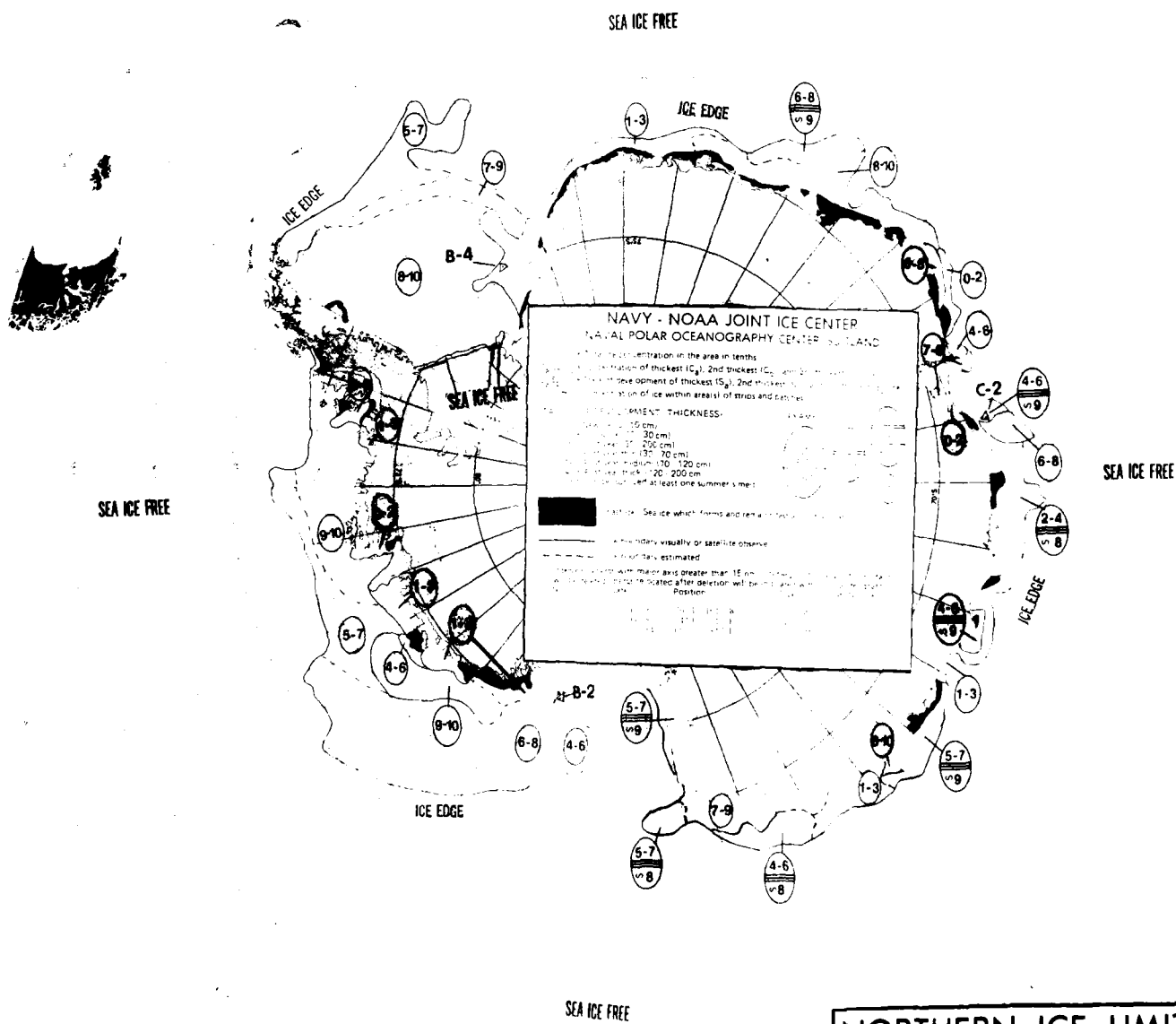
NORTHERN ICE LIMIT
Date: 15 SEP 83
NAVY—NOAA JOINT ICE CENTER
NAVAL POLAR OCEANOGRAPHY CENTER, SUITLAND



NORTHERN ICE LIMIT
Date: 29 DEC 83
 NAVY—NOAA JOINT ICE CENTER
 NAVAL POLAR OCEANOGRAPHY CENTER, SUITLAND



NORTHERN ICE LIMIT
Date: 12 JAN 84
NAVY—NOAA JOINT ICE CENTER
NAVAL POLAR OCEANOGRAPHY CENTER, SUITLAND



NORTHERN ICE LIMIT

Date: 19 JAN 84

NAVY—NOAA JOINT ICE CENTER
NAVAL POLAR OCEANOGRAPHY CENTER, SUITLAND

SEA ICE FREE



SEA ICE FREE

SEA ICE FREE

NORTHERN ICE LIMIT

Date: 23 FEB 84

NAVY—NOAA JOINT ICE CENTER
NAVAL POLAR OCEANOGRAPHY CENTER, SUITLAND

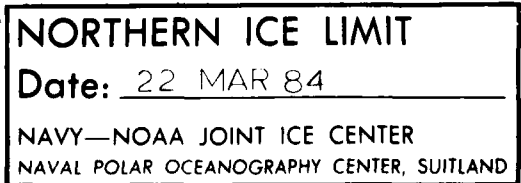
SEA ICE FREE

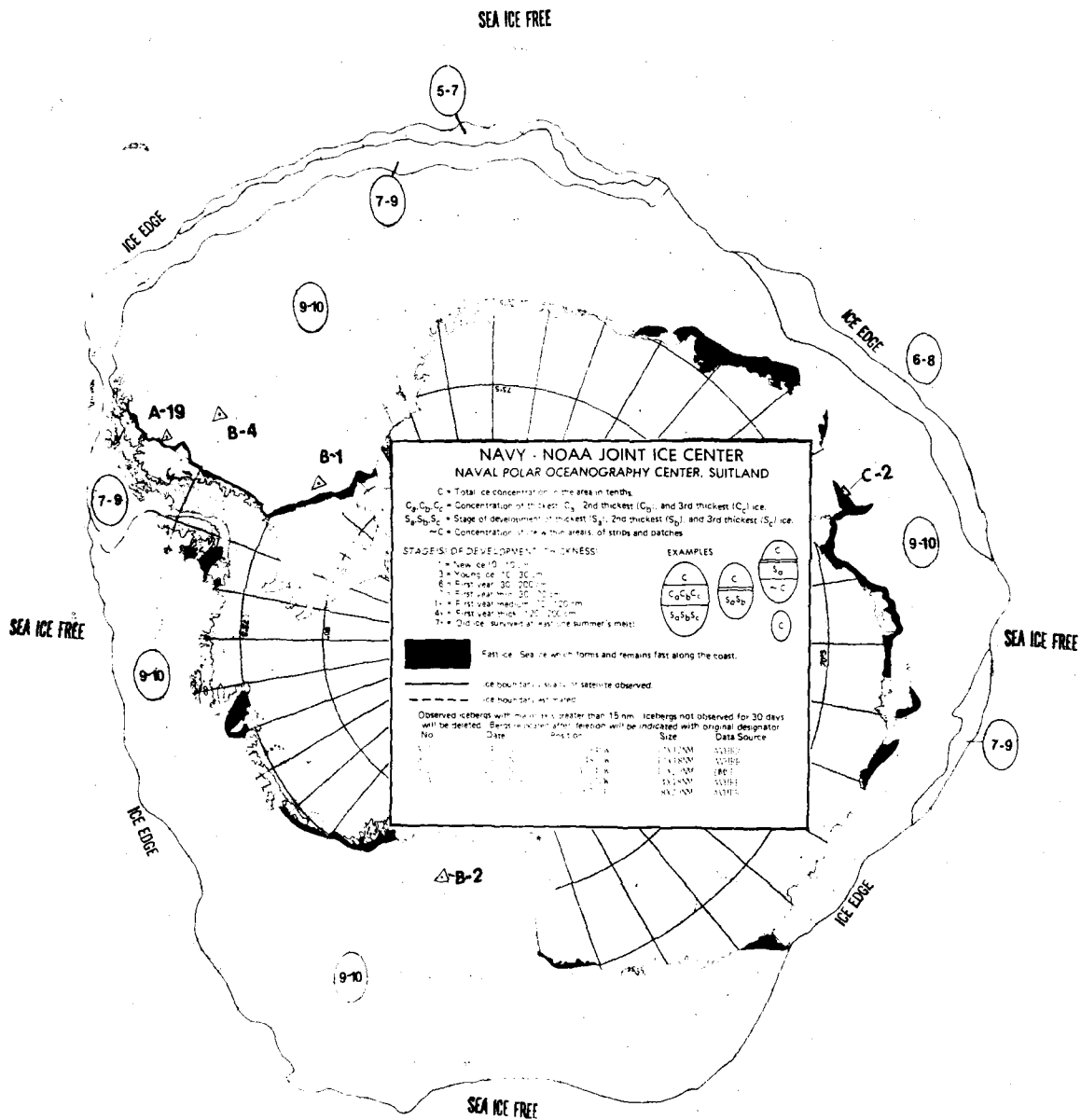
SEA ICE FREE

SEA ICE FREE

Date: 15 MAR 84

NAVY—NOAA JOINT ICE CENTER
NAVAL POLAR OCEANOGRAPHY CENTER, SUITLAND



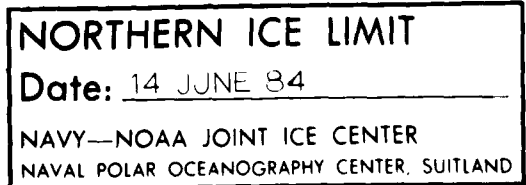


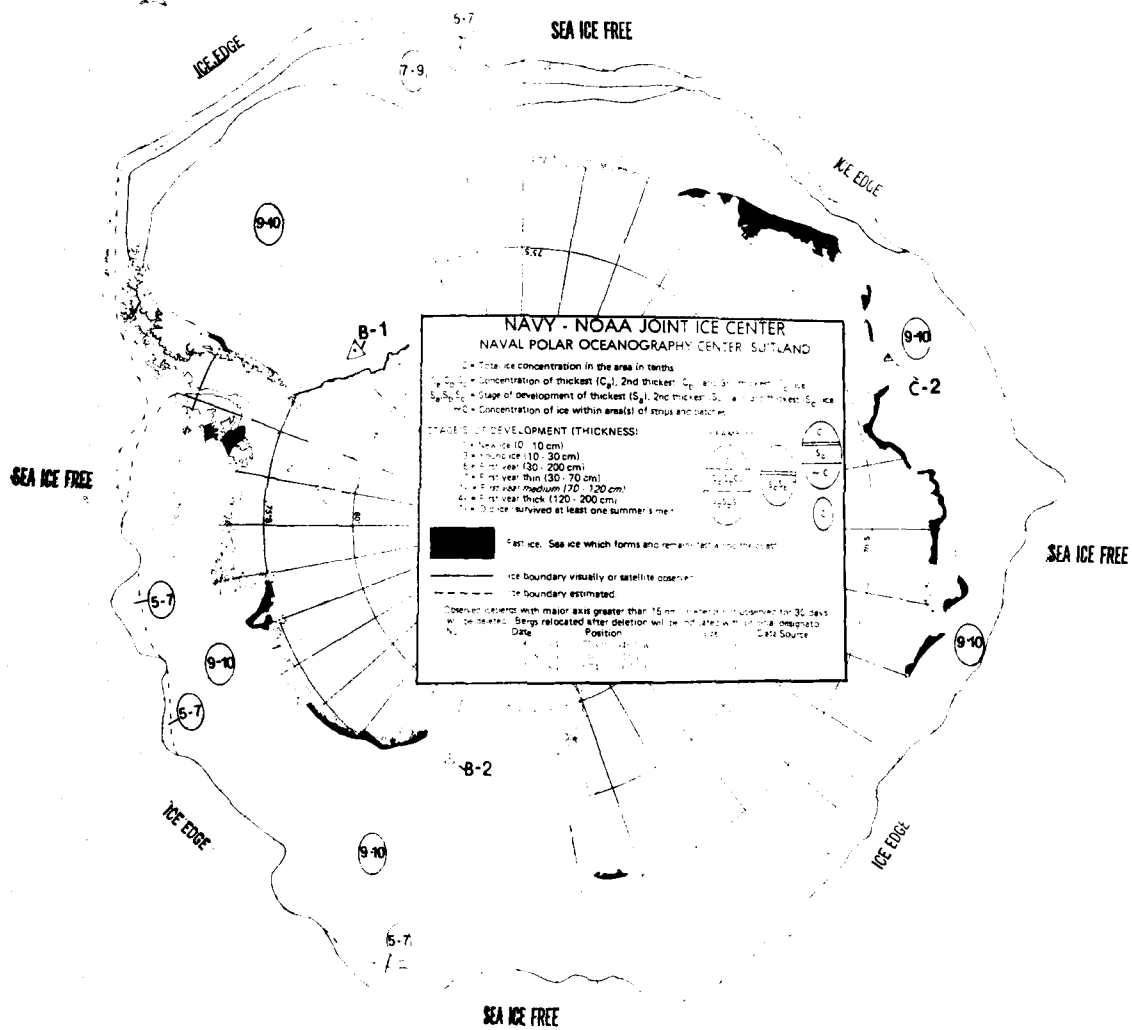
NORTHERN ICE LIMIT

Date: 28 JUNE 84

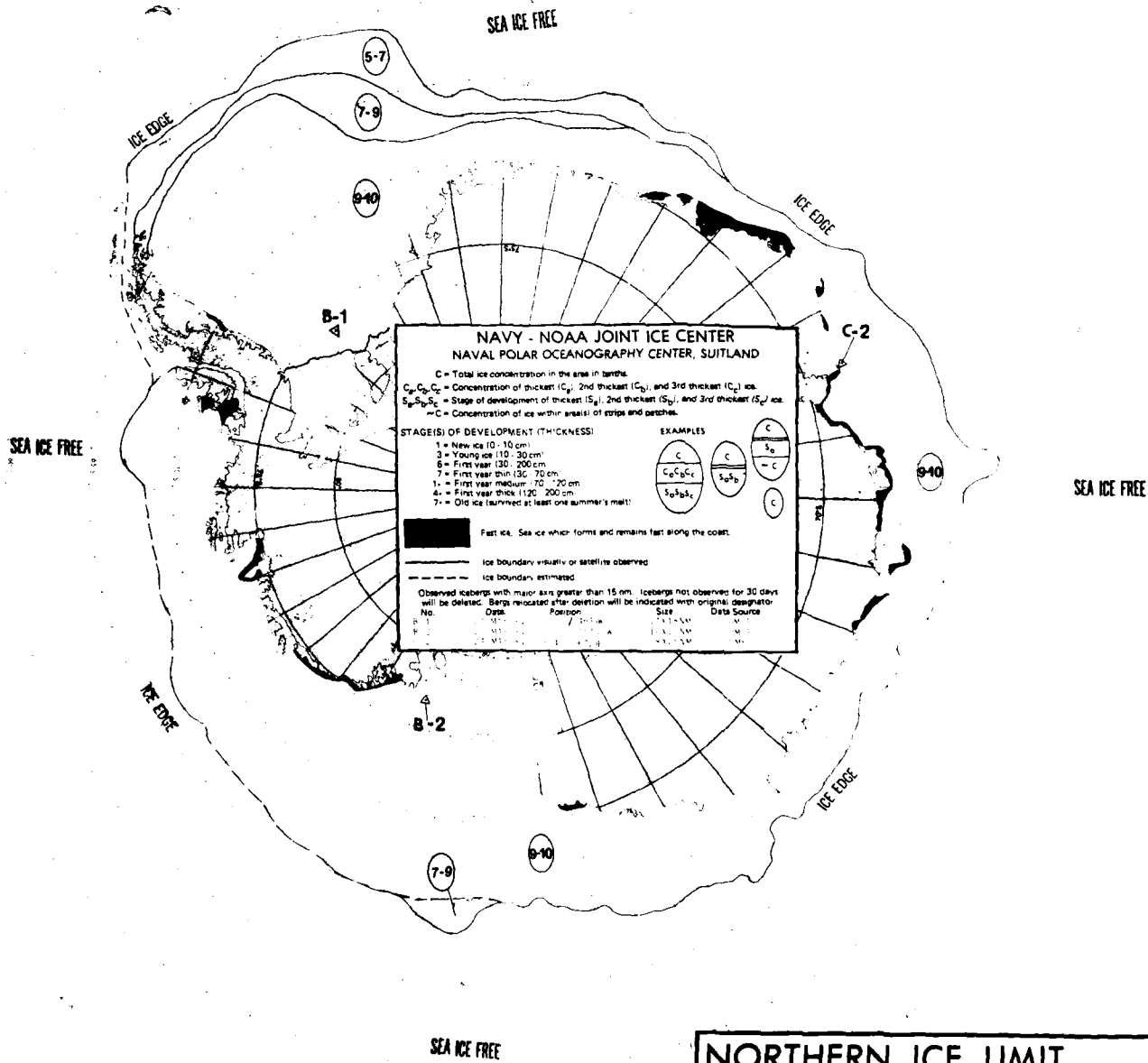
NAVY—NOAA JOINT ICE CENTER

NAVAL POLAR OCEANOGRAPHY CENTER, SUITLAND





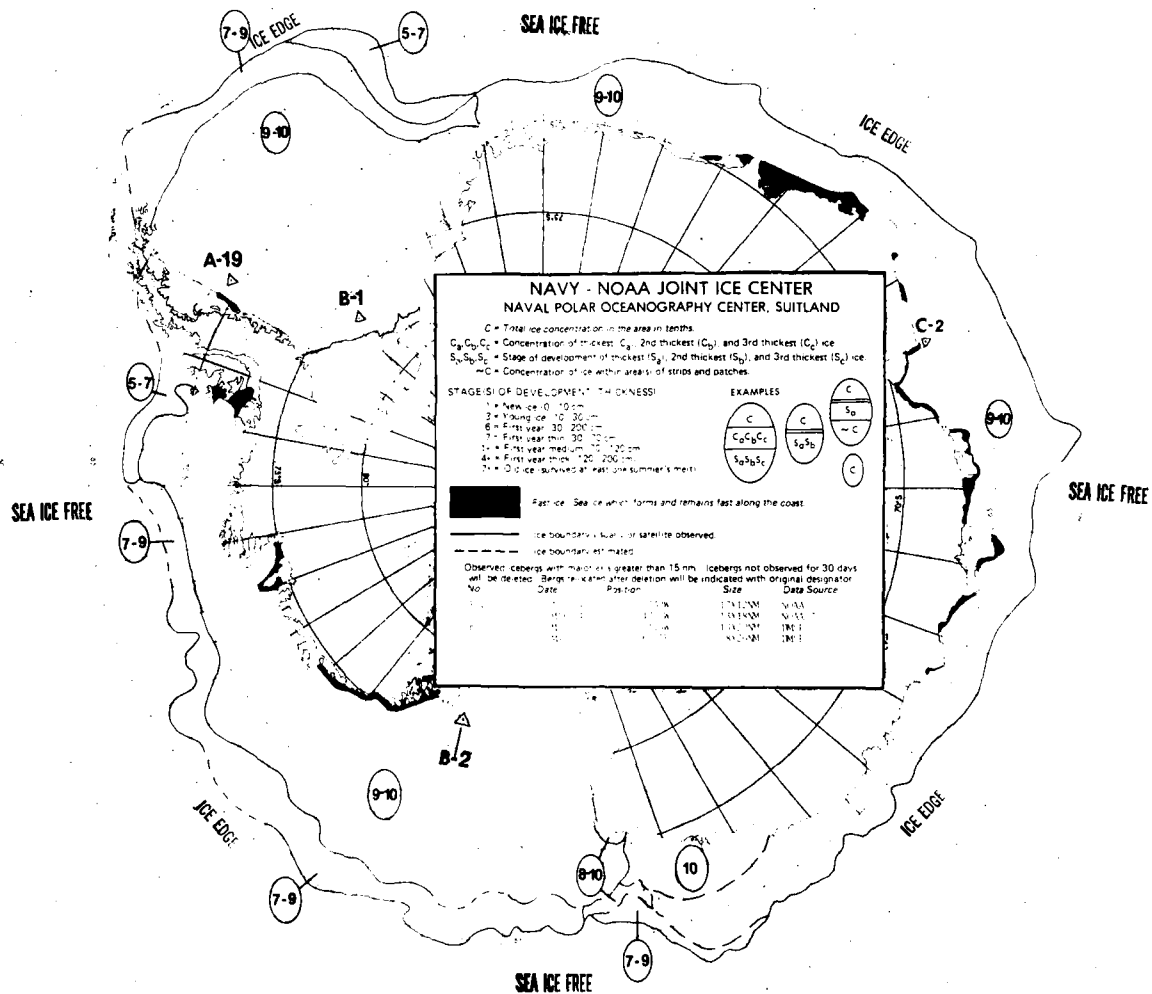
NORTHERN ICE LIMIT
Date: 07 JUN 84
NAVY—NOAA JOINT ICE CENTER
NAVAL POLAR OCEANOGRAPHY CENTER, SVALBARD



NORTHERN ICE LIMIT

Date: 31 MAY 84

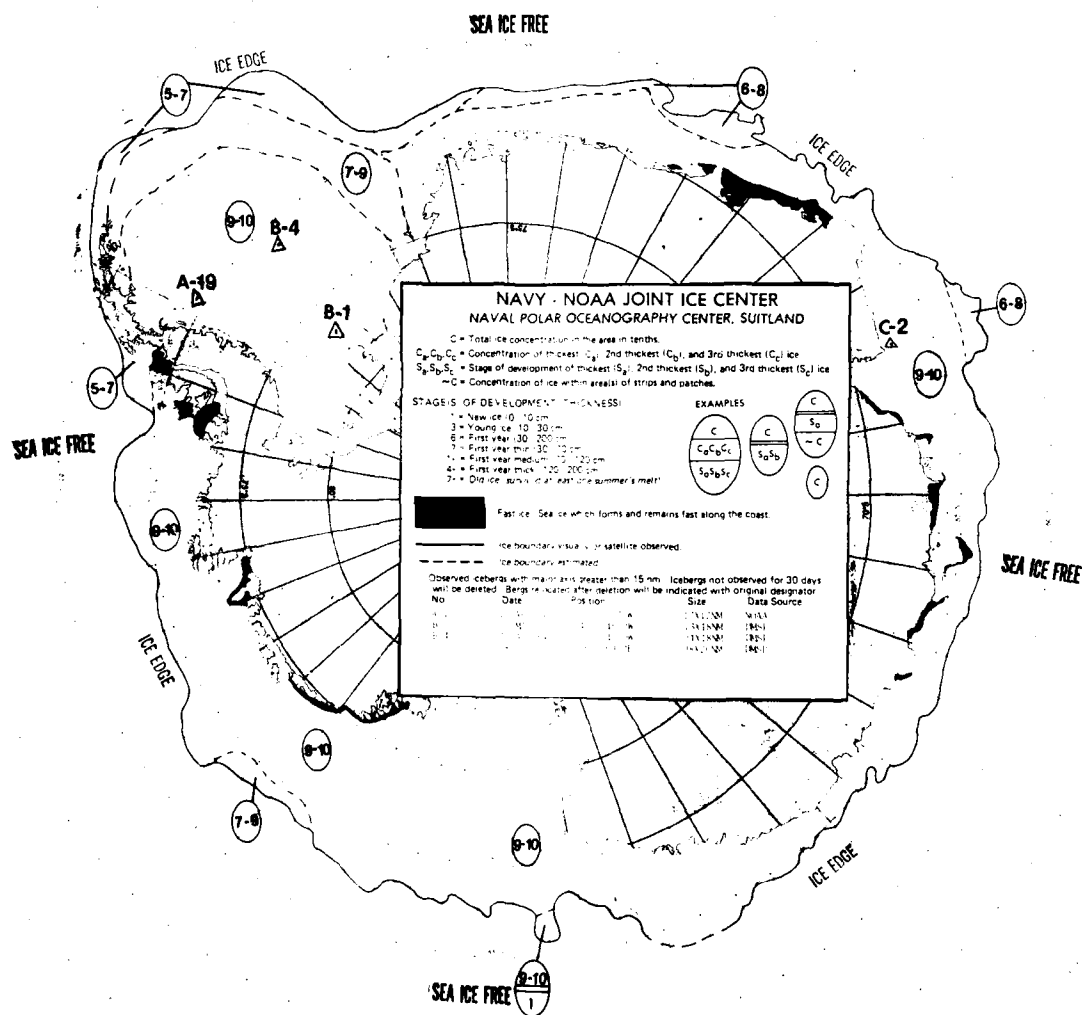
NAVY—NOAA JOINT ICE CENTER
 NAVAL POLAR OCEANOGRAPHY CENTER, SUITLAND



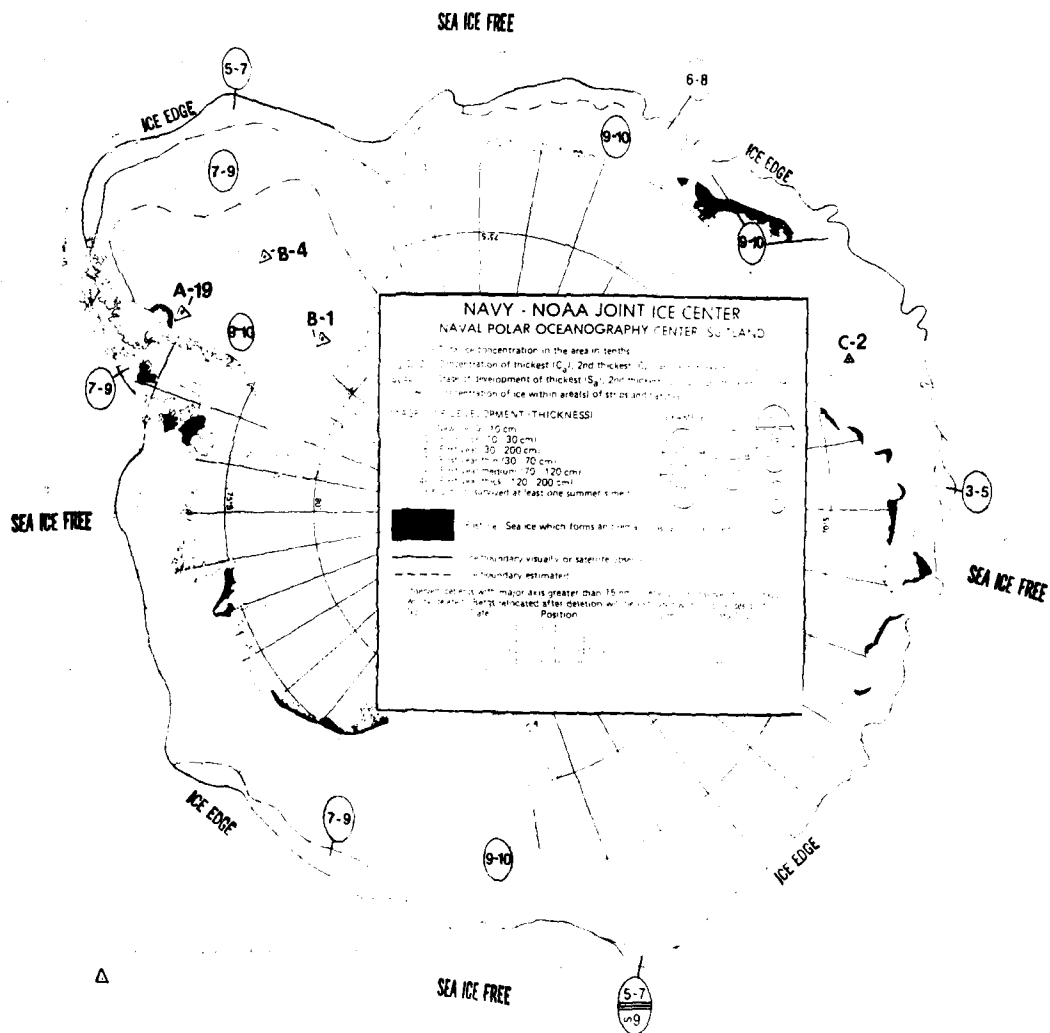
NORTHERN ICE LIMIT

Date: 17 MAY 84

NAVY—NOAA JOINT ICE CENTER
NAVAL POLAR OCEANOGRAPHY CENTER, SUITLAND



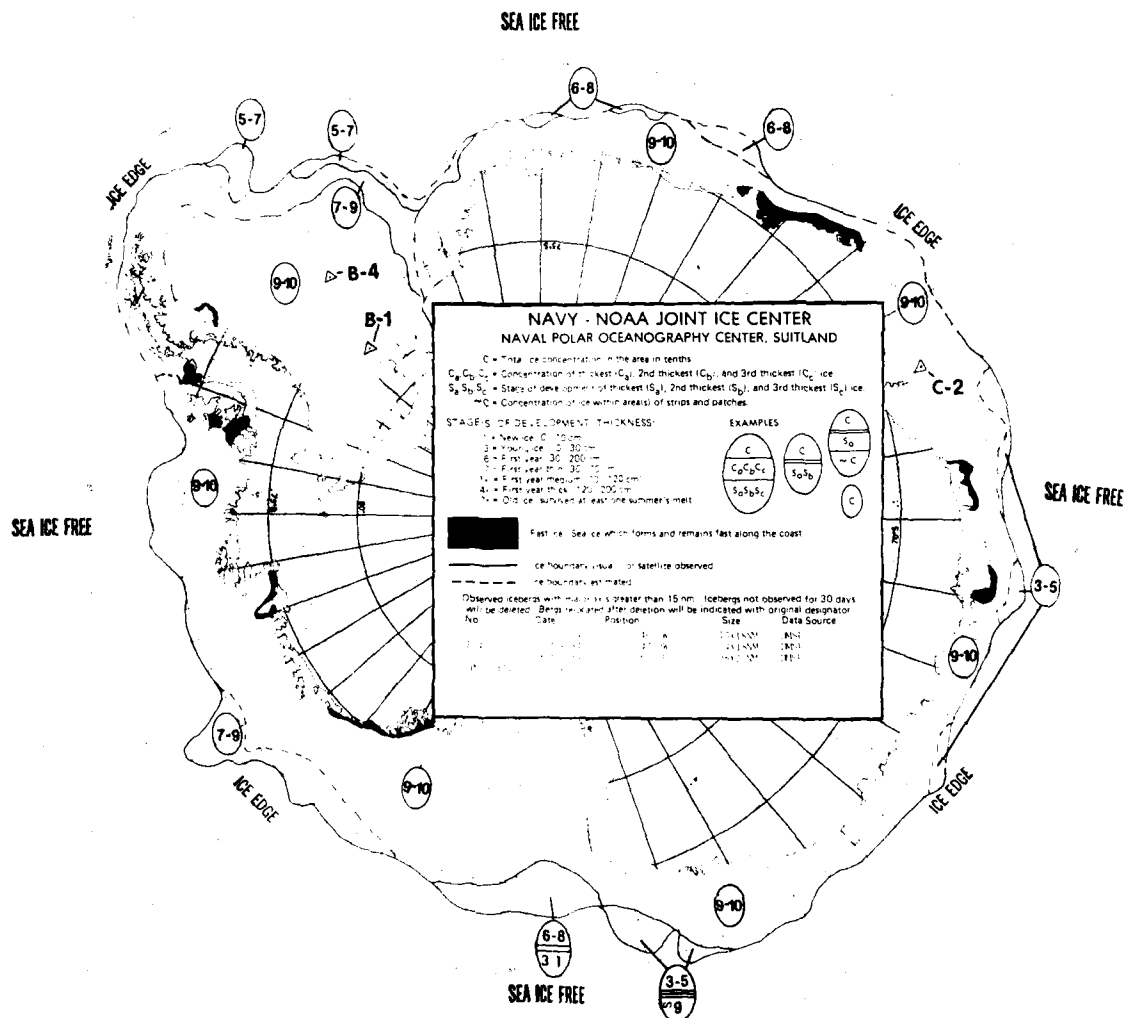
NORTHERN ICE LIMIT
Date: 03 MAY 84
NAVY—NOAA JOINT ICE CENTER
NAVAL POLAR OCEANOGRAPHY CENTER, SUITLAND



NORTHERN ICE LIMIT

Date: 26 APR 84

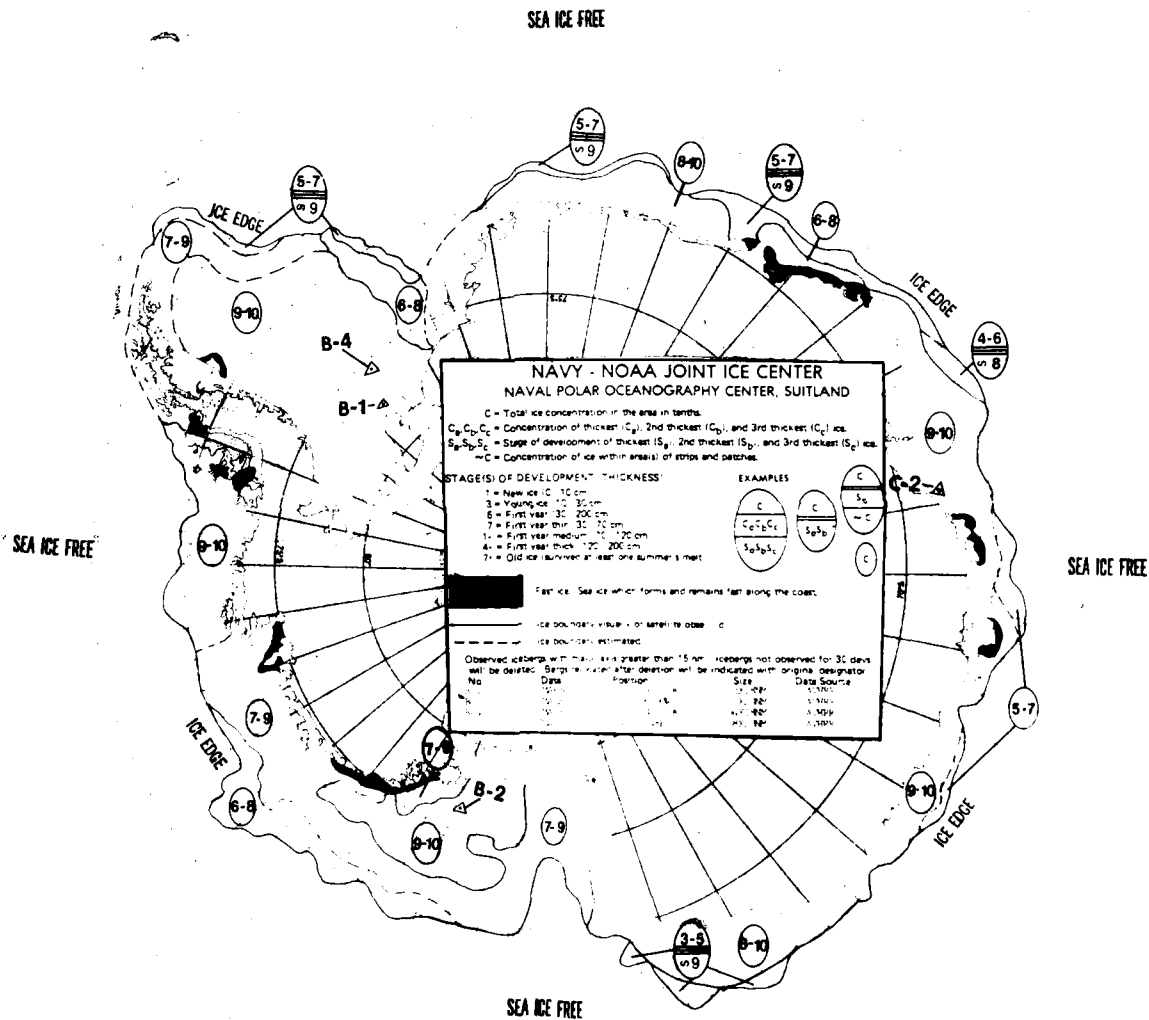
NAVY—NOAA JOINT ICE CENTER
 NAVAL POLAR OCEANOGRAPHY CENTER, SUITLAND



NORTHERN ICE LIMIT

Date: 19 APR 84

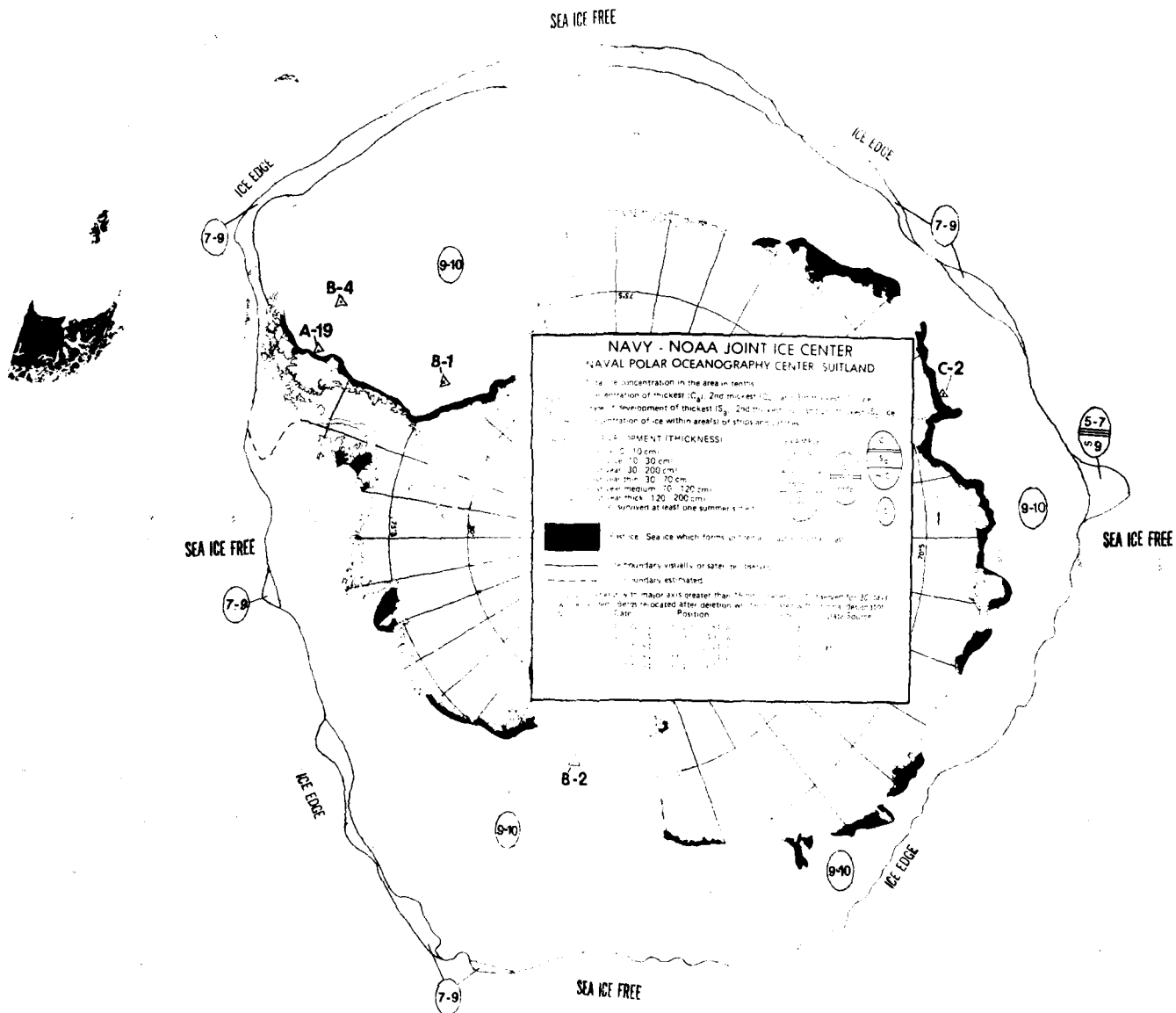
NAVY—NOAA JOINT ICE CENTER
NAVAL POLAR OCEANOGRAPHY CENTER, SUITLAND



NORTHERN ICE LIMIT

Date: 05 APR 84

NAVY—NOAA JOINT ICE CENTER
 NAVAL POLAR OCEANOGRAPHY CENTER, SUITLAND



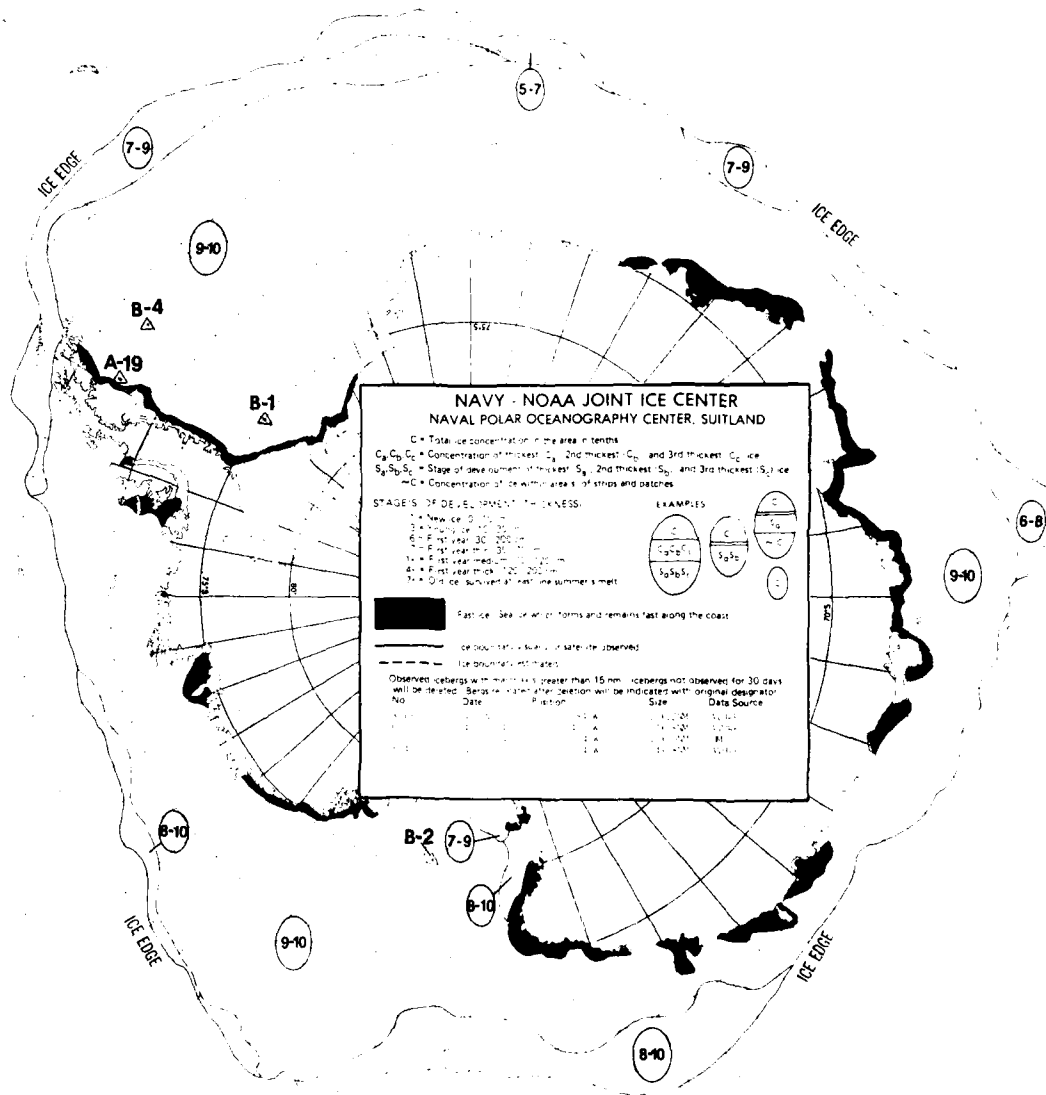
NORTHERN ICE LIMIT
 Date: 05 JUL 84
 NAVY—NOAA JOINT ICE CENTER
 NAVAL POLAR OCEANOGRAPHY CENTER, SUITLAND

SEA ICE FREE

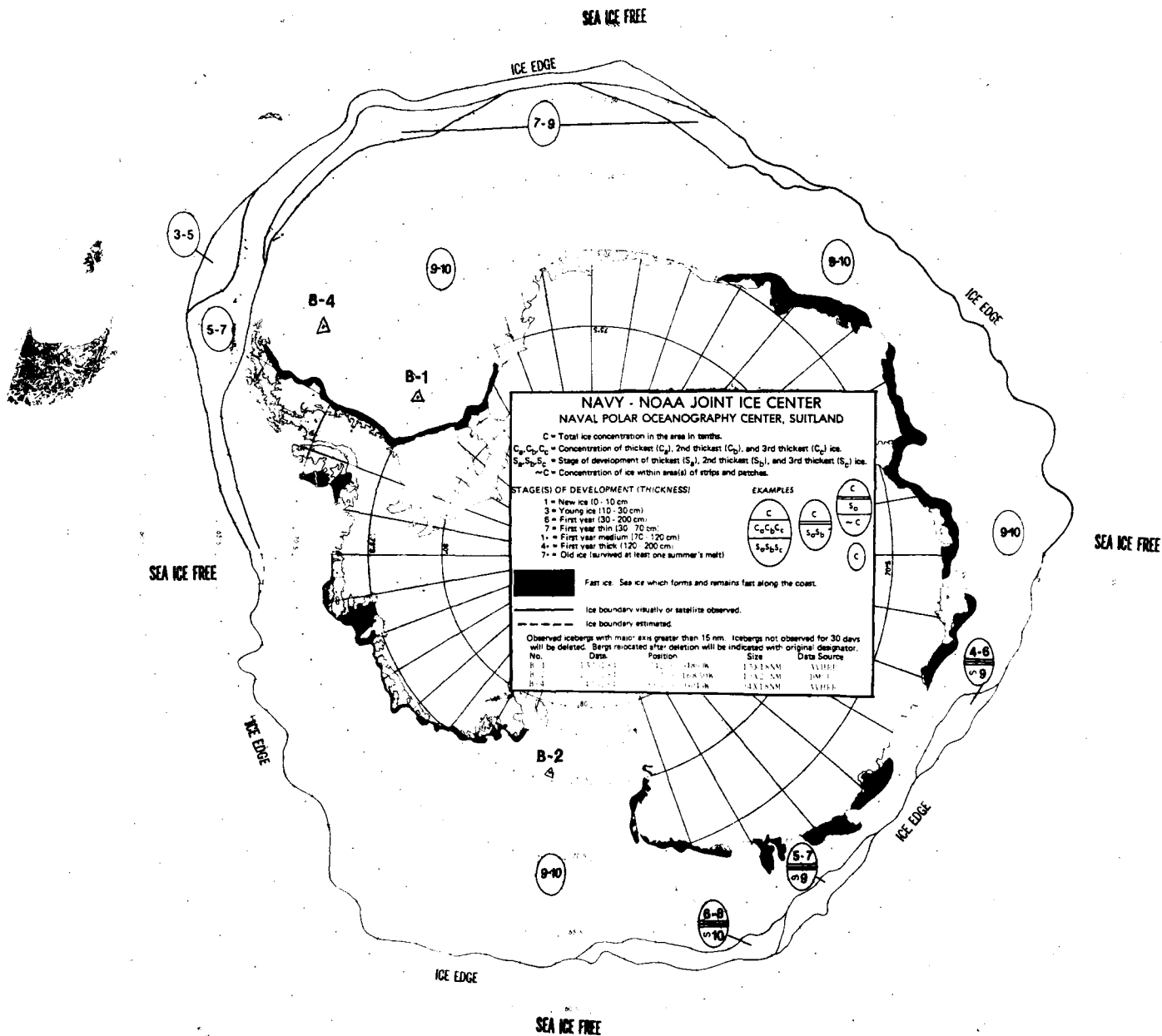
SEA ICE FREE

SEA ICE FREE

SEA ICE FREE



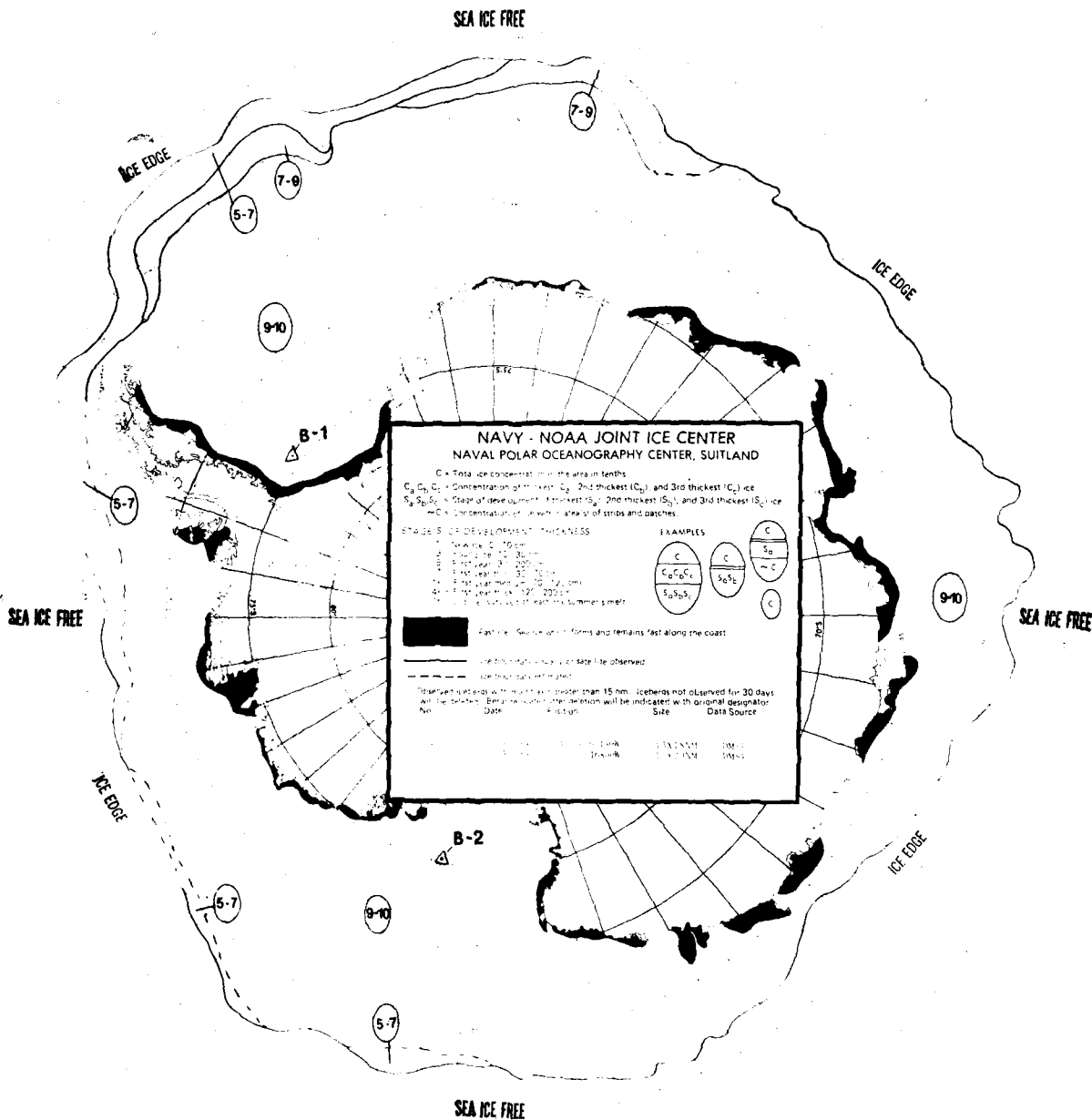
NORTHERN ICE LIMIT
Date: 12 JUL 84
 NAVY—NOAA JOINT ICE CENTER
 NAVAL POLAR OCEANOGRAPHY CENTER, SUITLAND



NORTHERN ICE LIMIT

Date: 26 JULY 1984

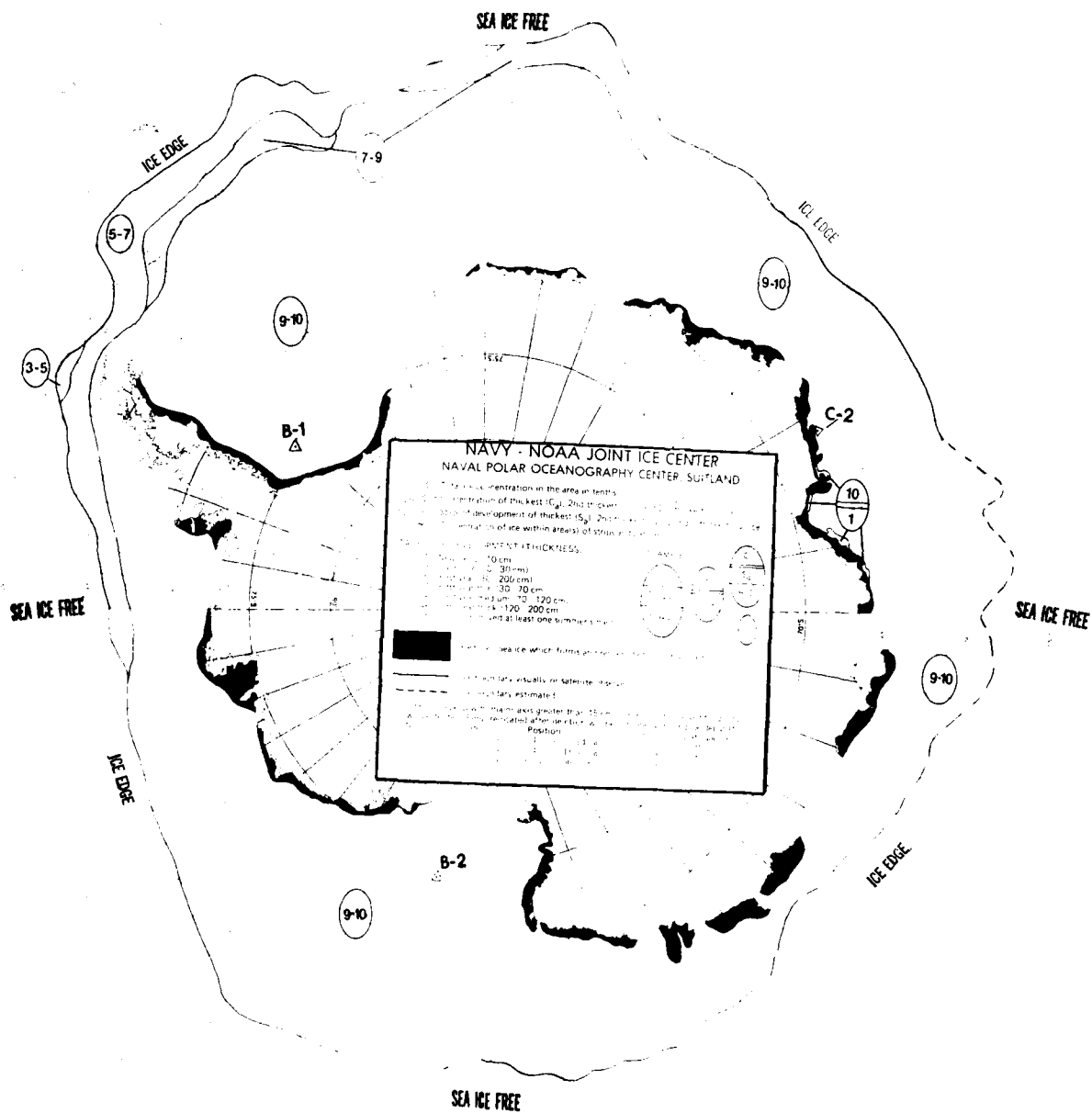
NAVY—NOAA JOINT ICE CENTER
NAVAL POLAR OCEANOGRAPHY CENTER, SUITLAND



NORTHERN ICE LIMIT

Date: 09 AUG 84

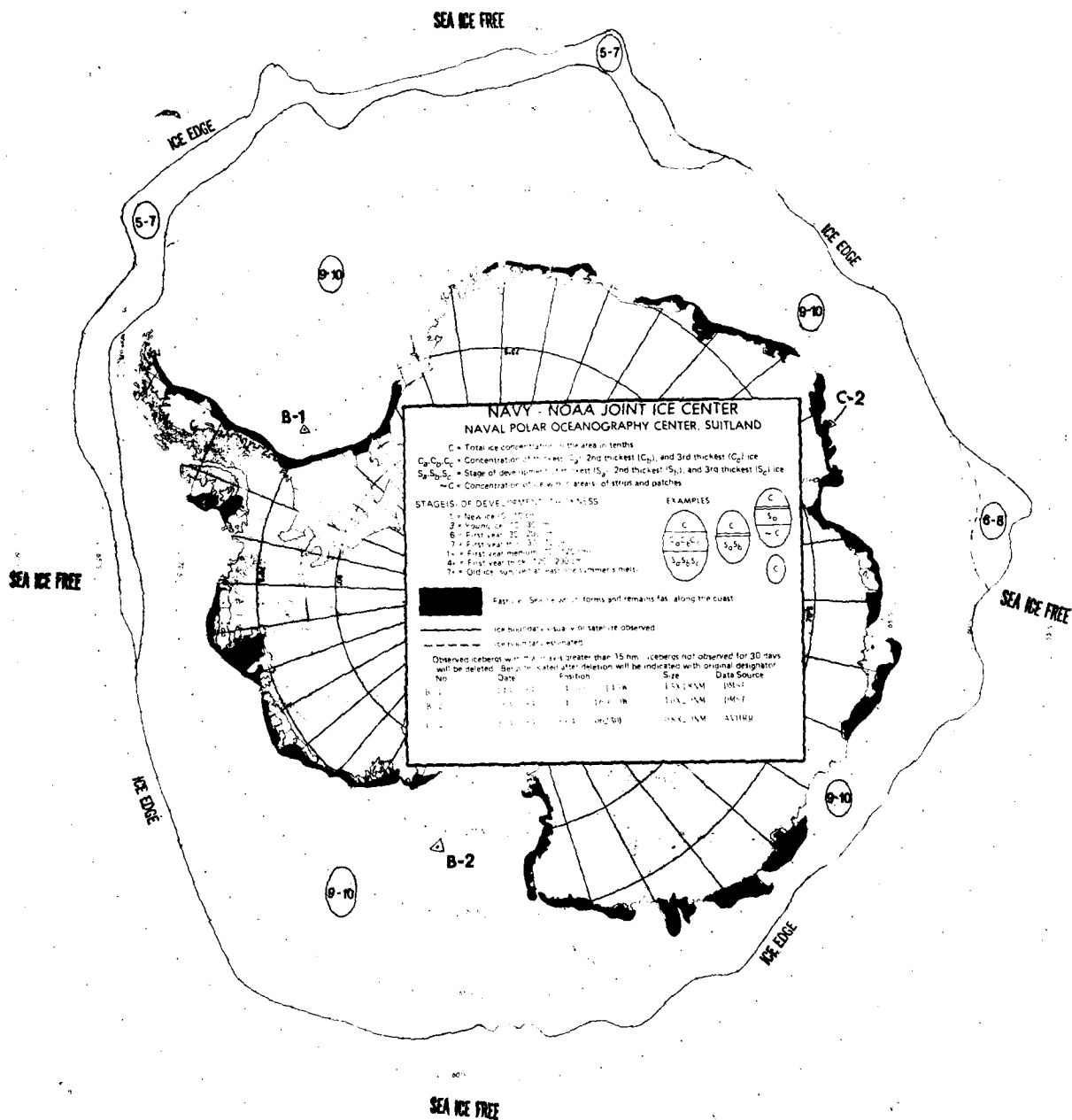
NAVY—NOAA JOINT ICE CENTER
NAVAL POLAR OCEANOGRAPHY CENTER, SUITLAND



NORTHERN ICE LIMIT

Date: 16 AUG 84

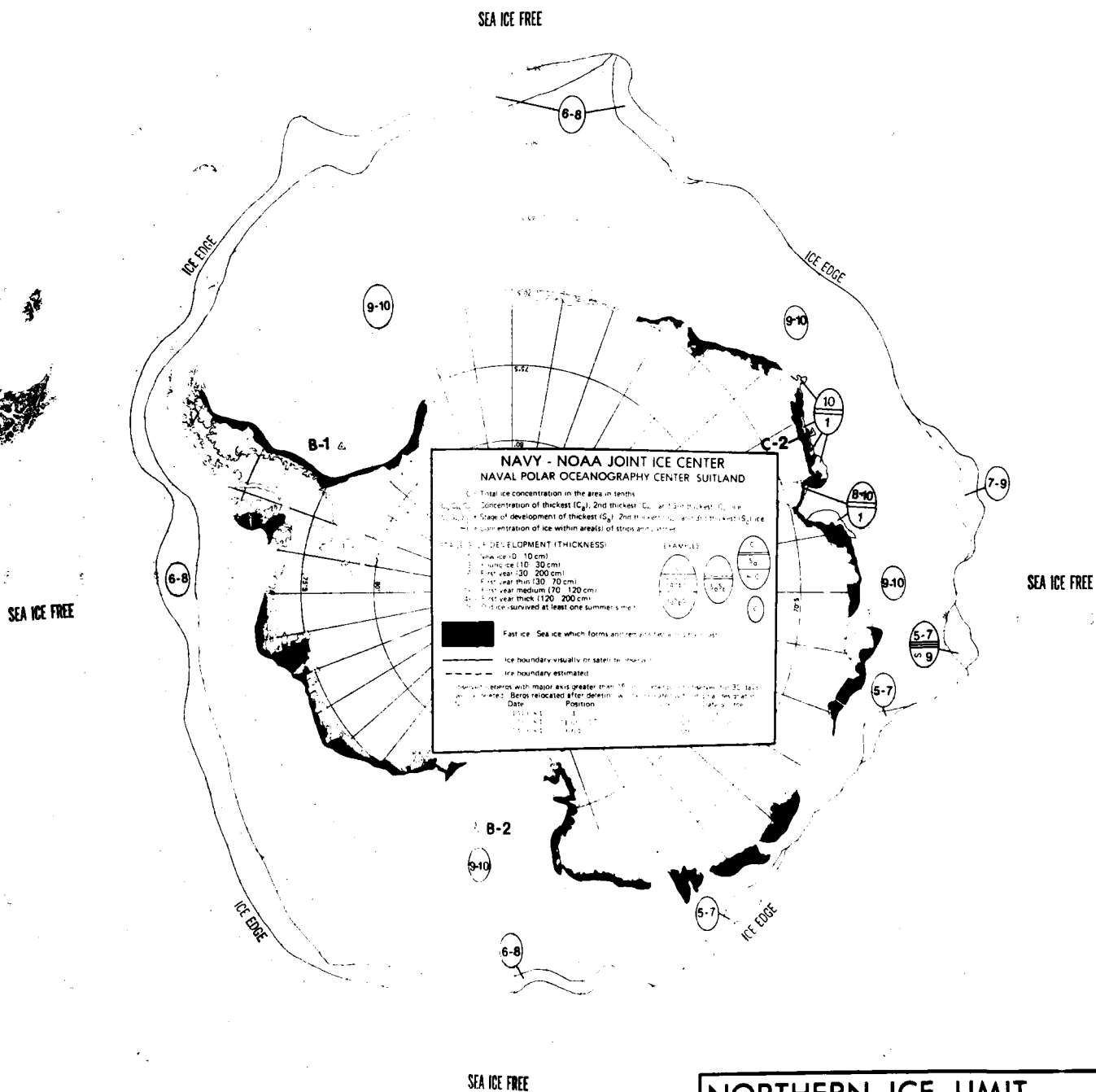
NAVY—NOAA JOINT ICE CENTER
NAVAL POLAR OCEANOGRAPHY CENTER, SUITLAND



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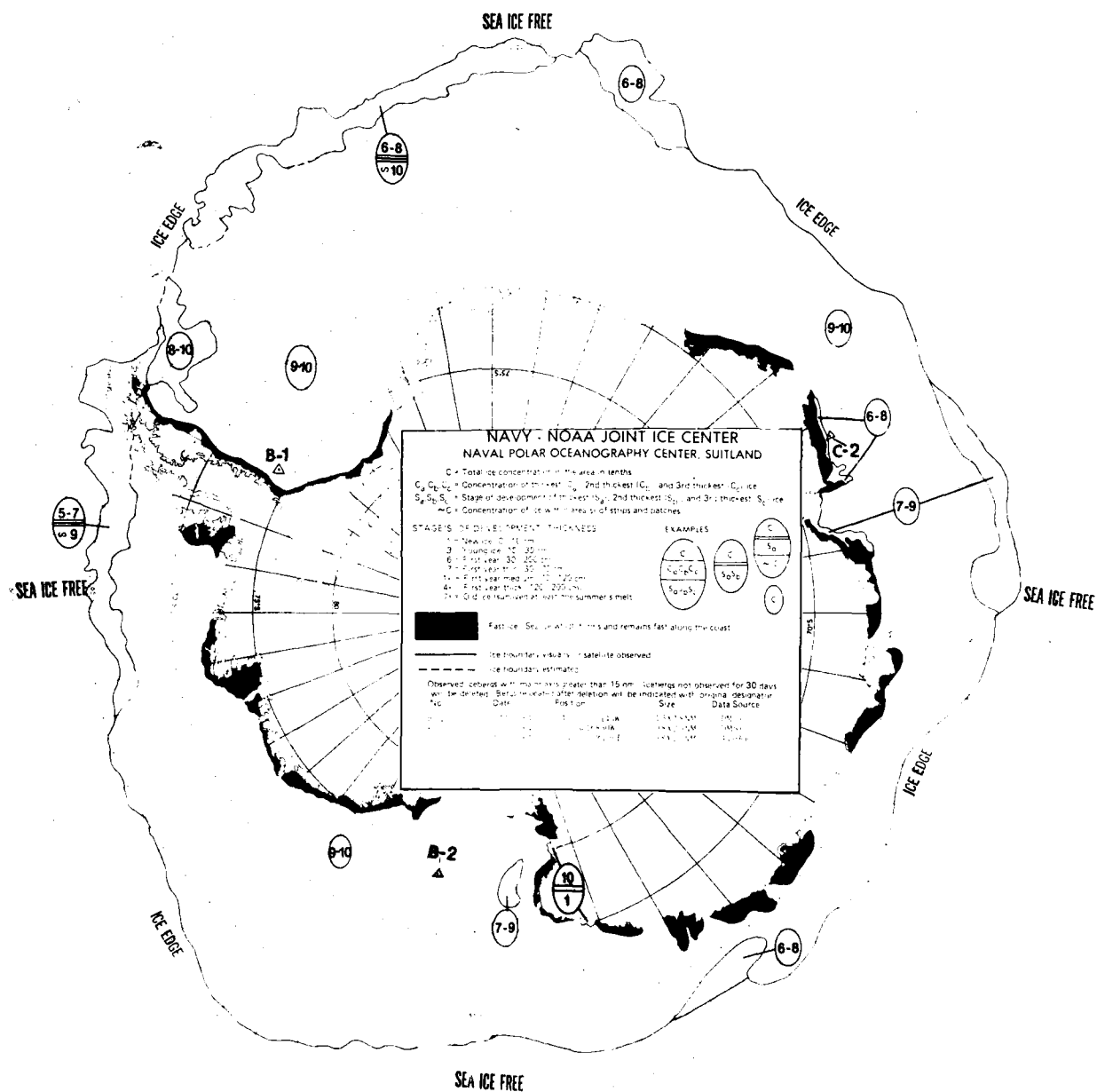
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NAVAL POLAR OCEANOGRAPHY CENTER, SUITLAND



NORTHERN ICE LIMIT

Date: 30 AUG 1984

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NAVAL POLAR OCEANOGRAPHY CENTER, SUITLAND

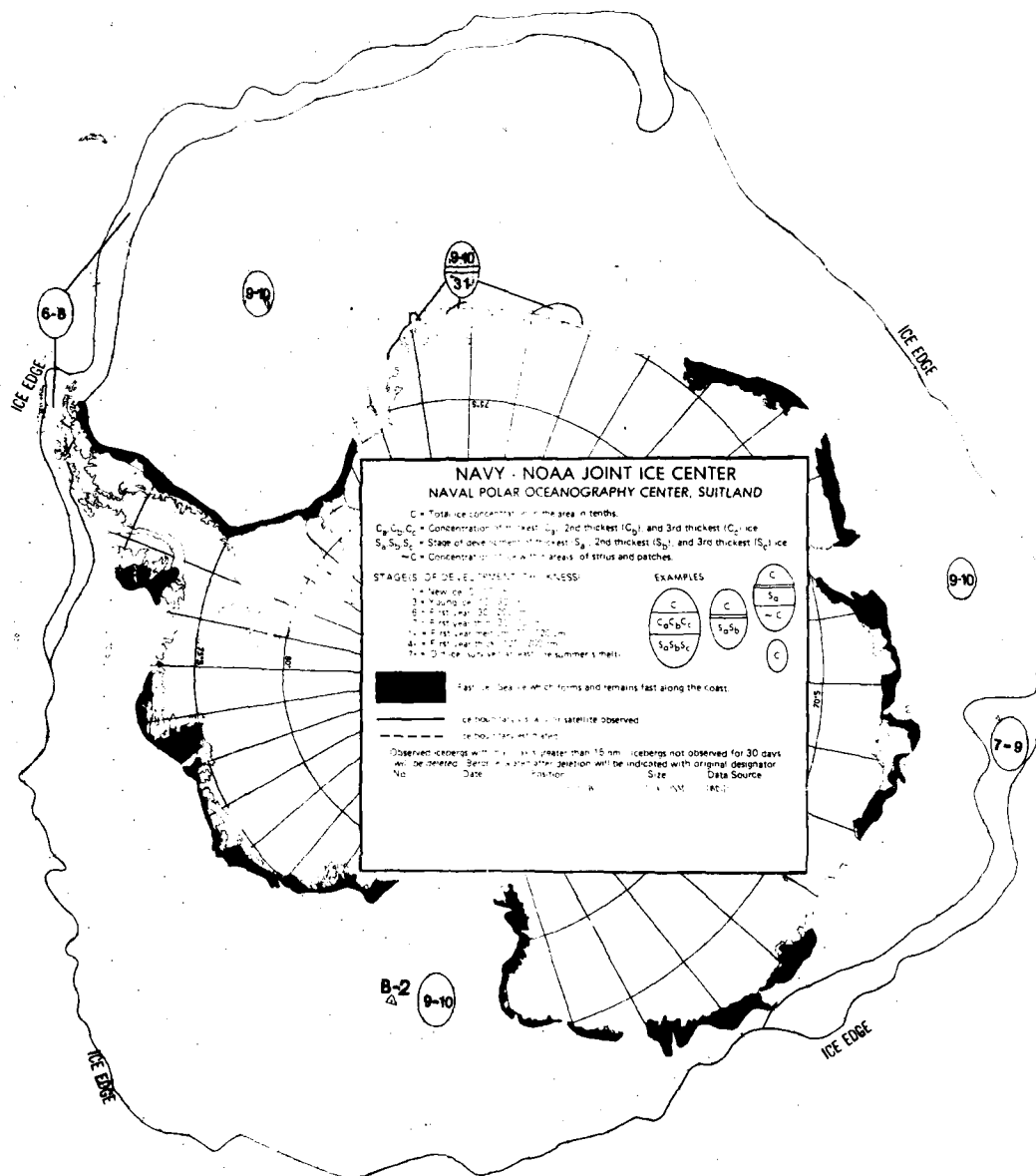


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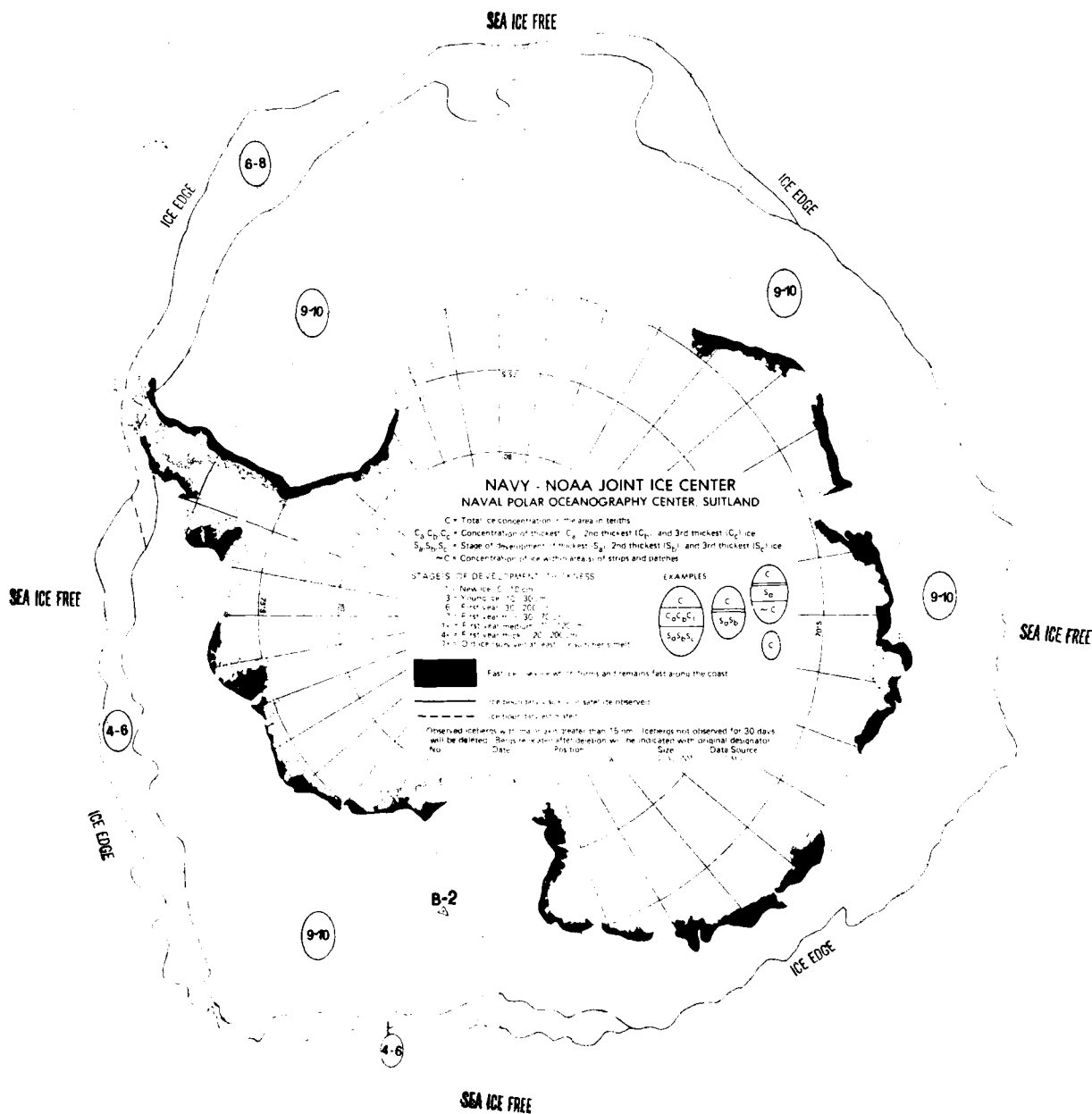
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 NAVAL POLAR OCEANOGRAPHY CENTER, SUITLAND

SEA ICE FREE



SEA ICE FREE

NORTHERN ICE LIMIT
Date: 20 SEP84
 NAVY—NOAA JOINT ICE CENTER
 NAVAL POLAR OCEANOGRAPHY CENTER, SUITLAND



NORTHERN ICE LIMIT
Date: 04 OCT 84
 NAVY—NOAA JOINT ICE CENTER
 NAVAL POLAR OCEANOGRAPHY CENTER, SUITLAND

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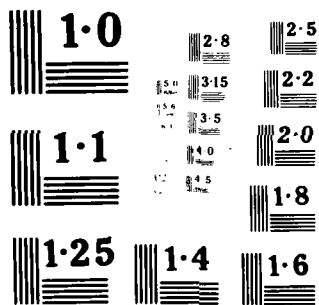
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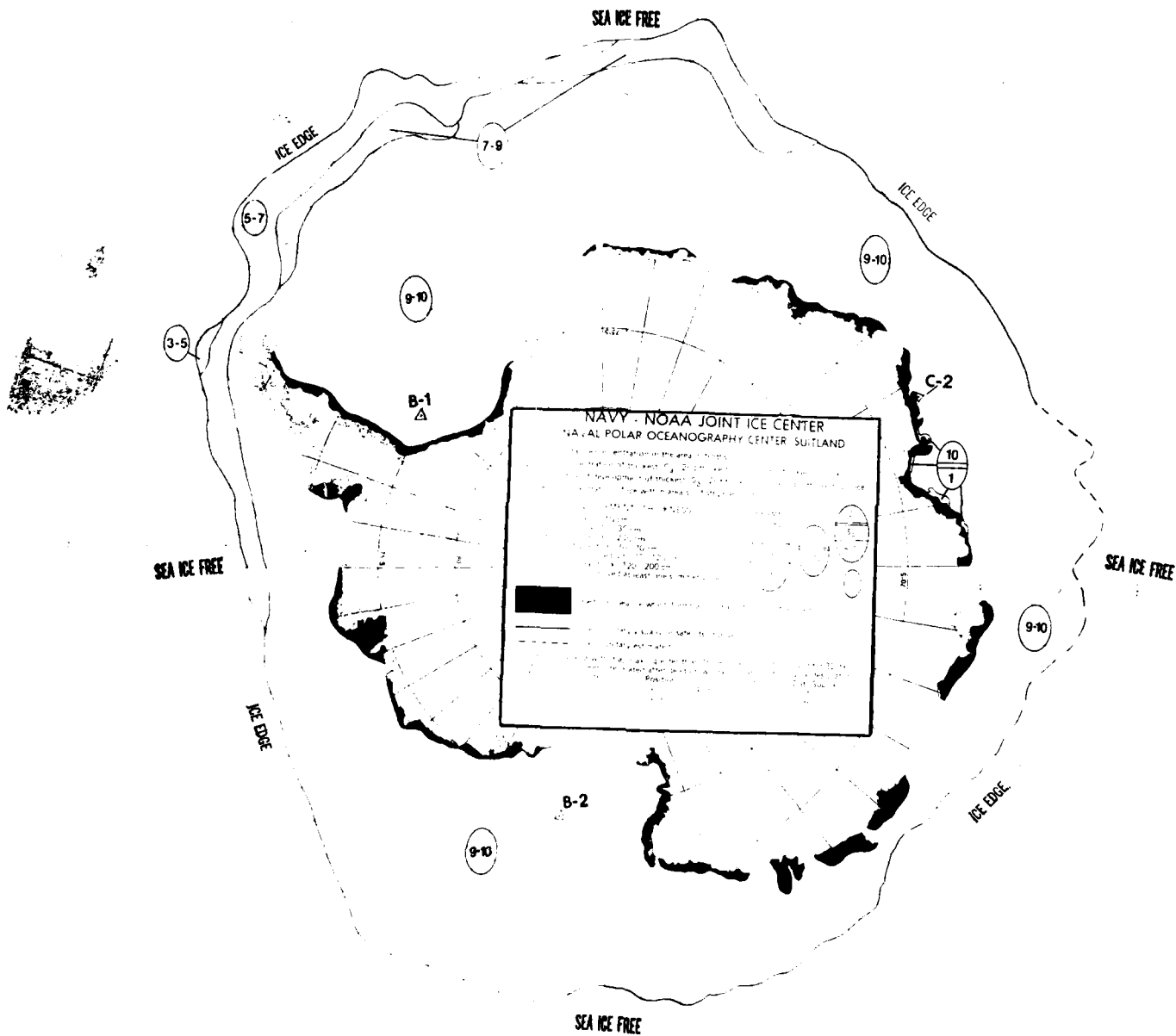
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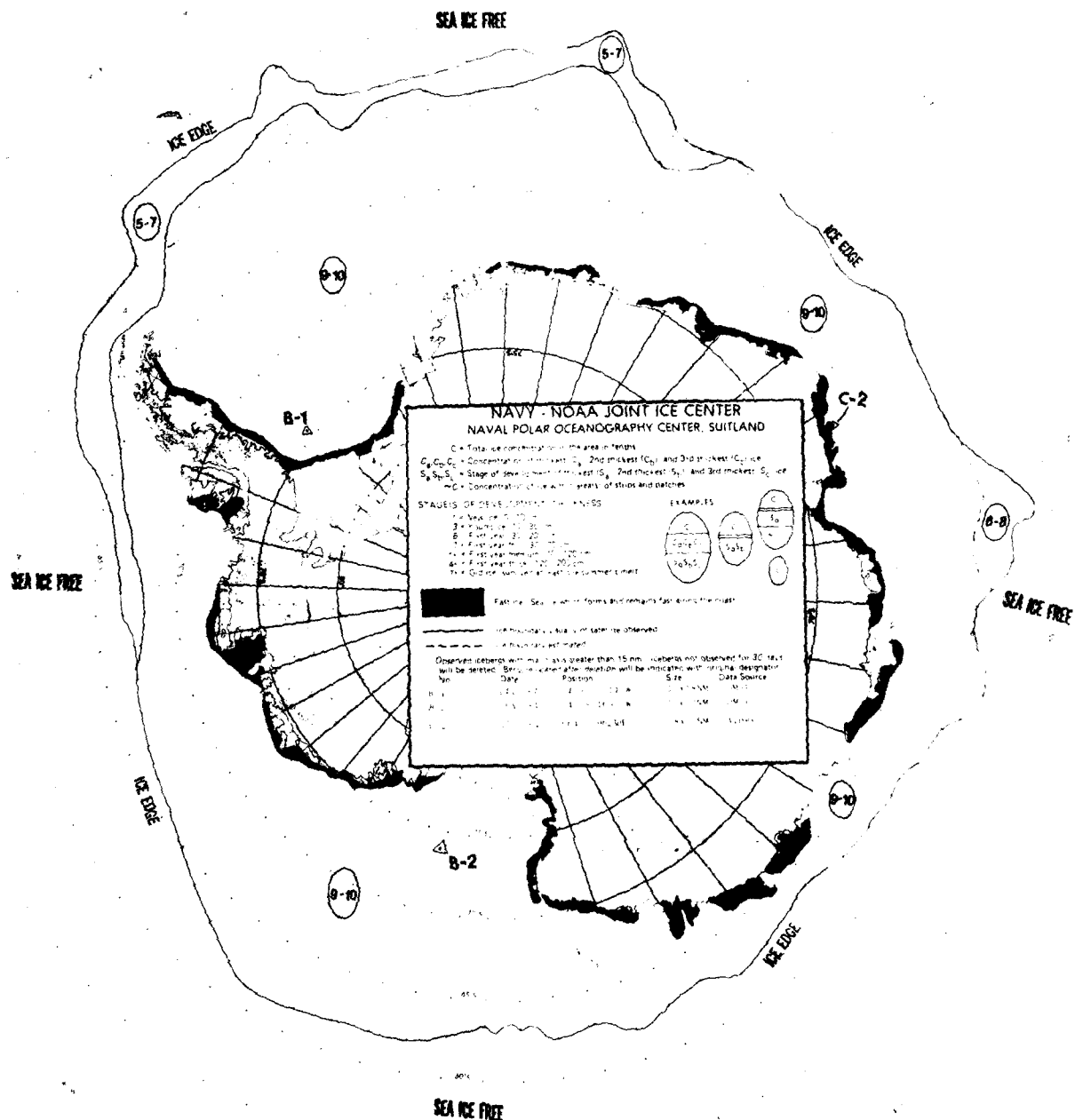




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 NAVAL POLAR OCEANOGRAPHY CENTER, SUITLAND



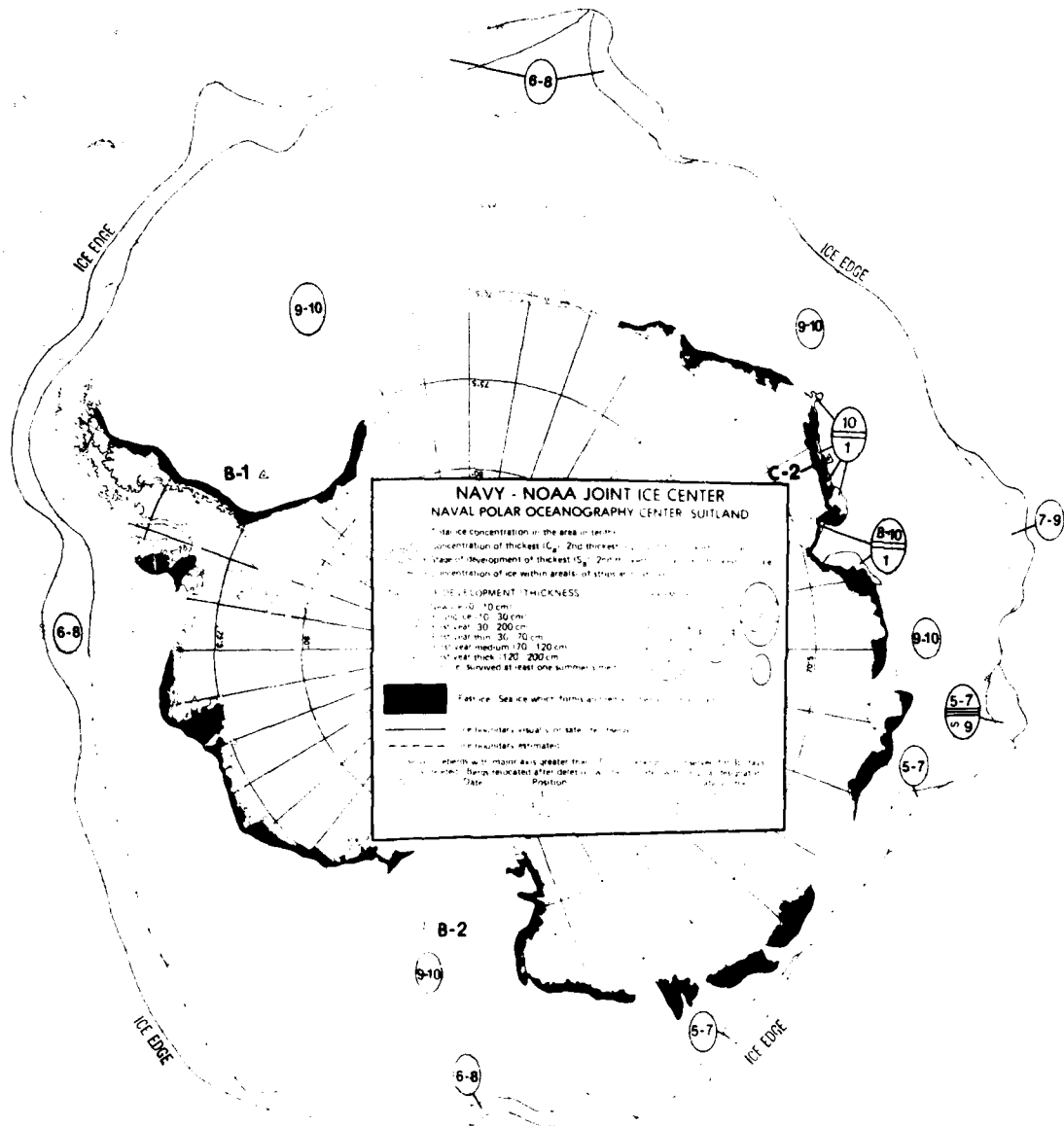
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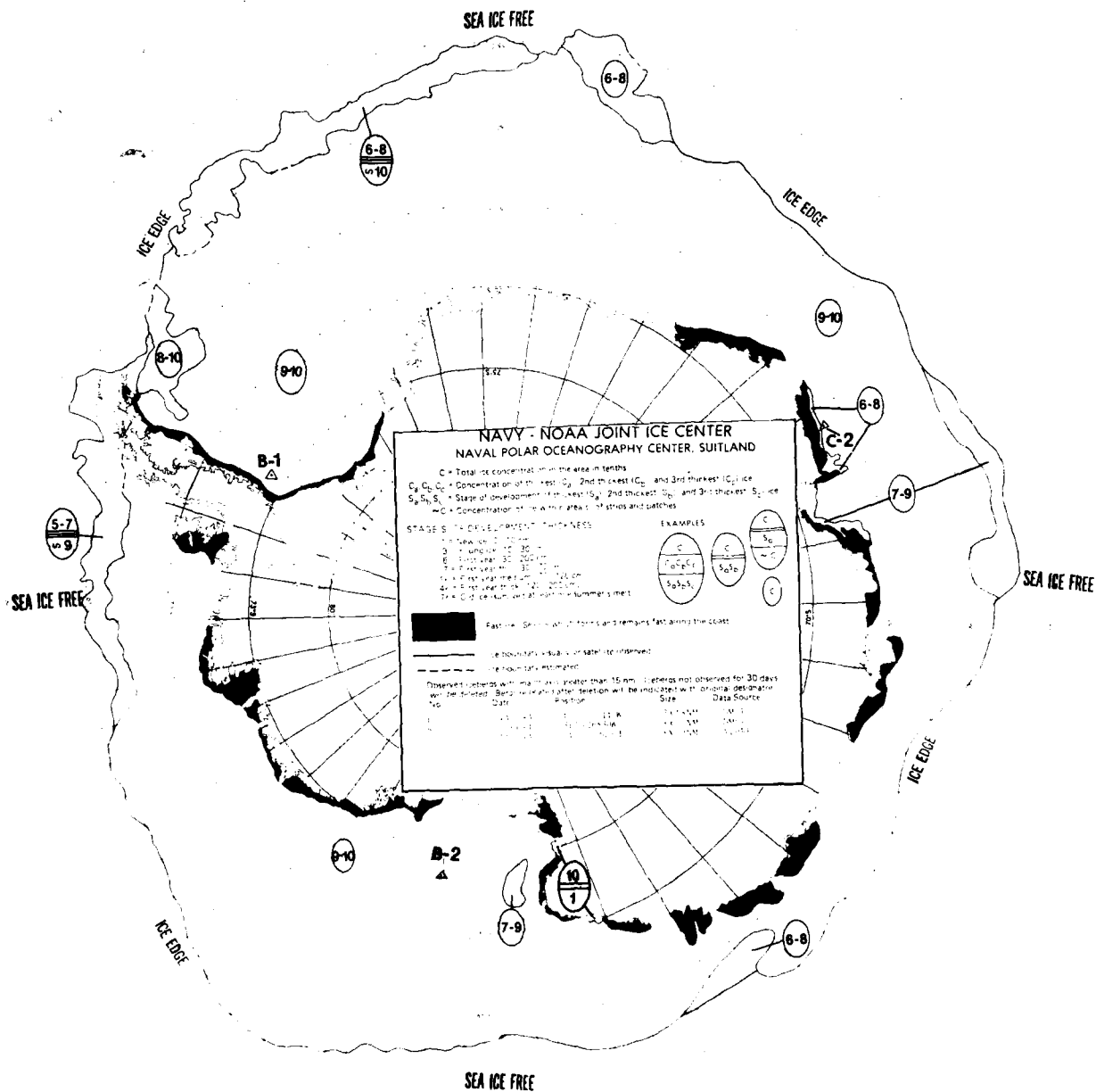
SEA ICE FREE

SEA ICE FREE

SEA ICE FREE



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 NAVAL POLAR OCEANOGRAPHY CENTER, SUITLAND



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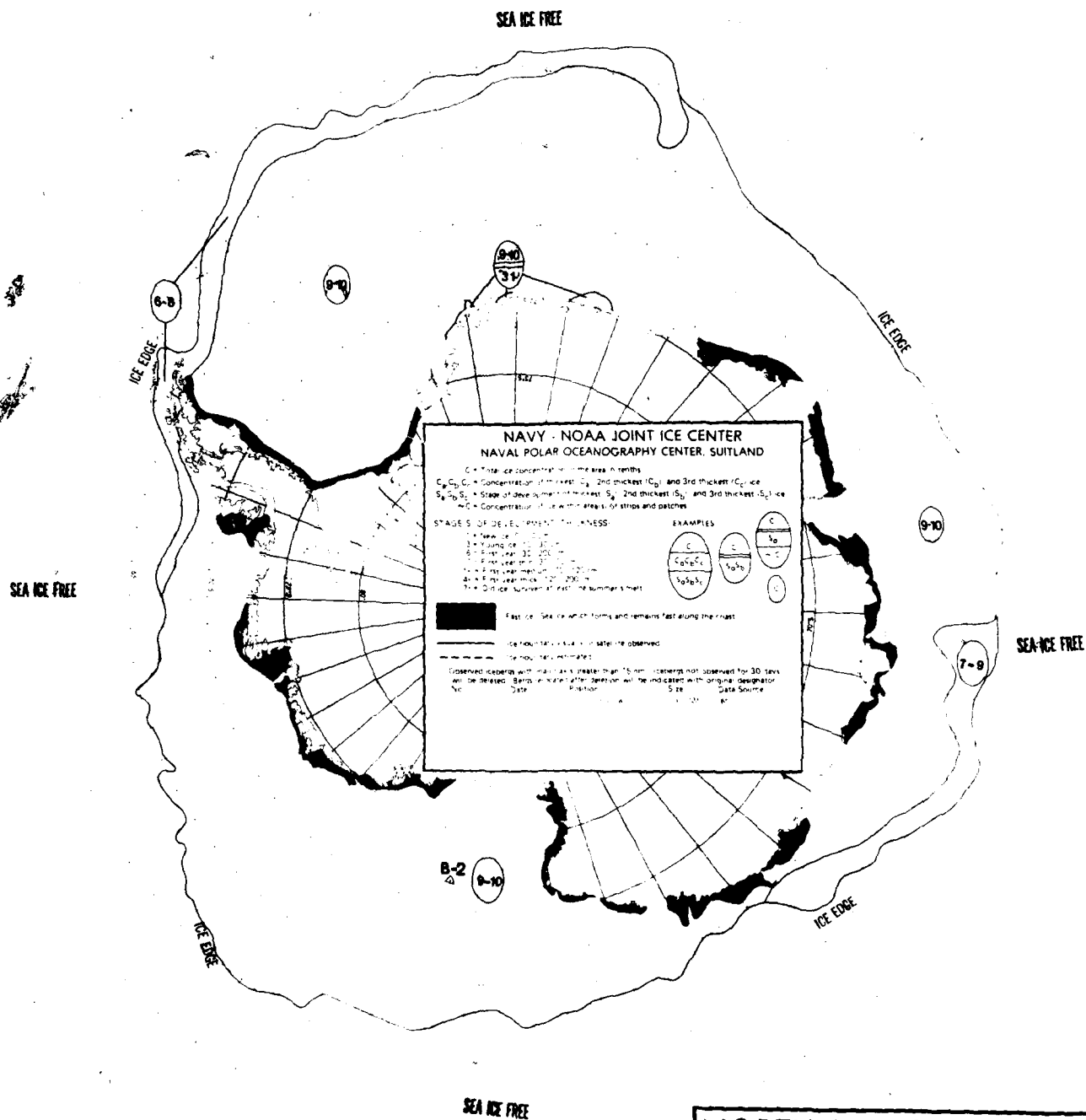
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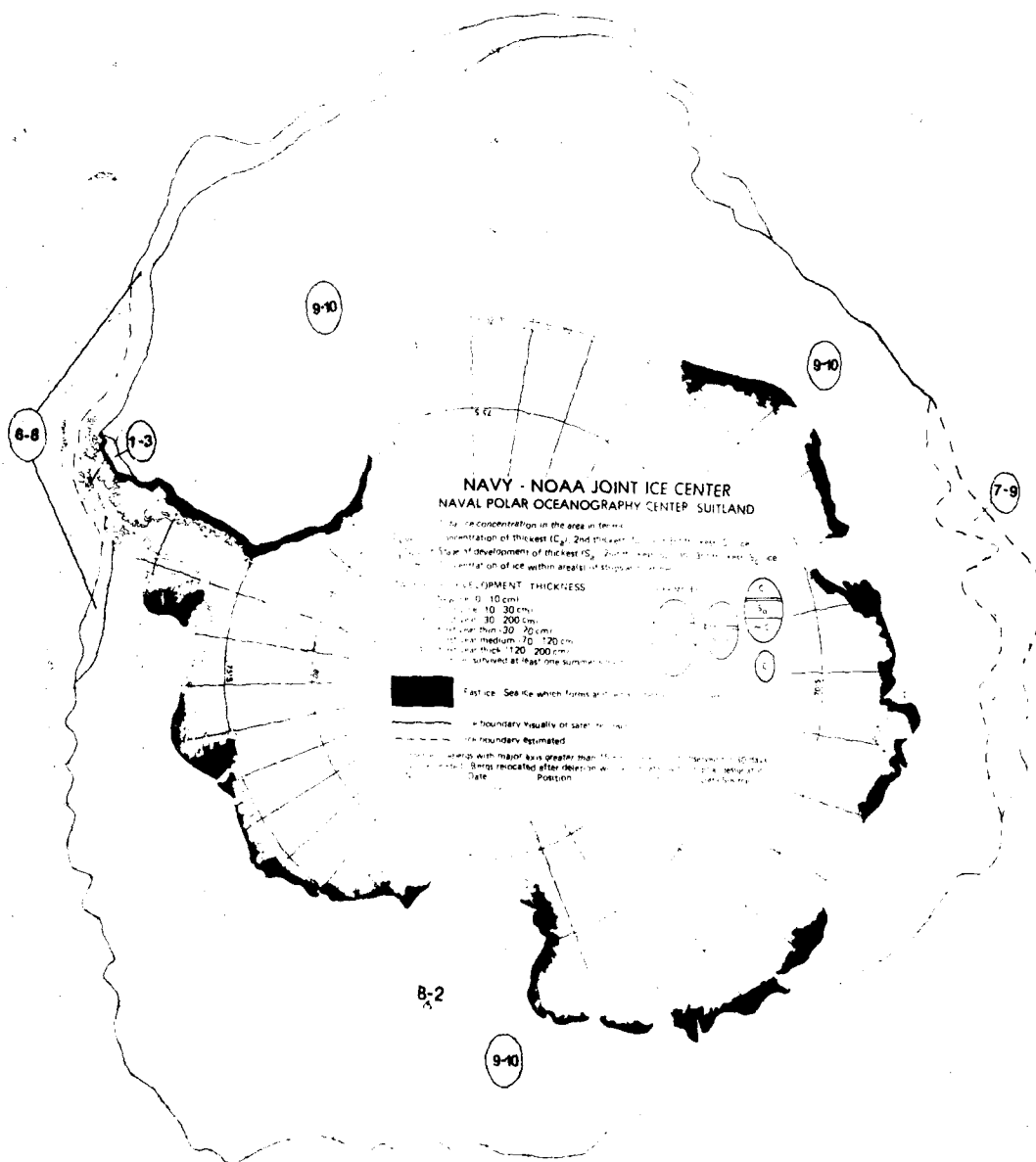


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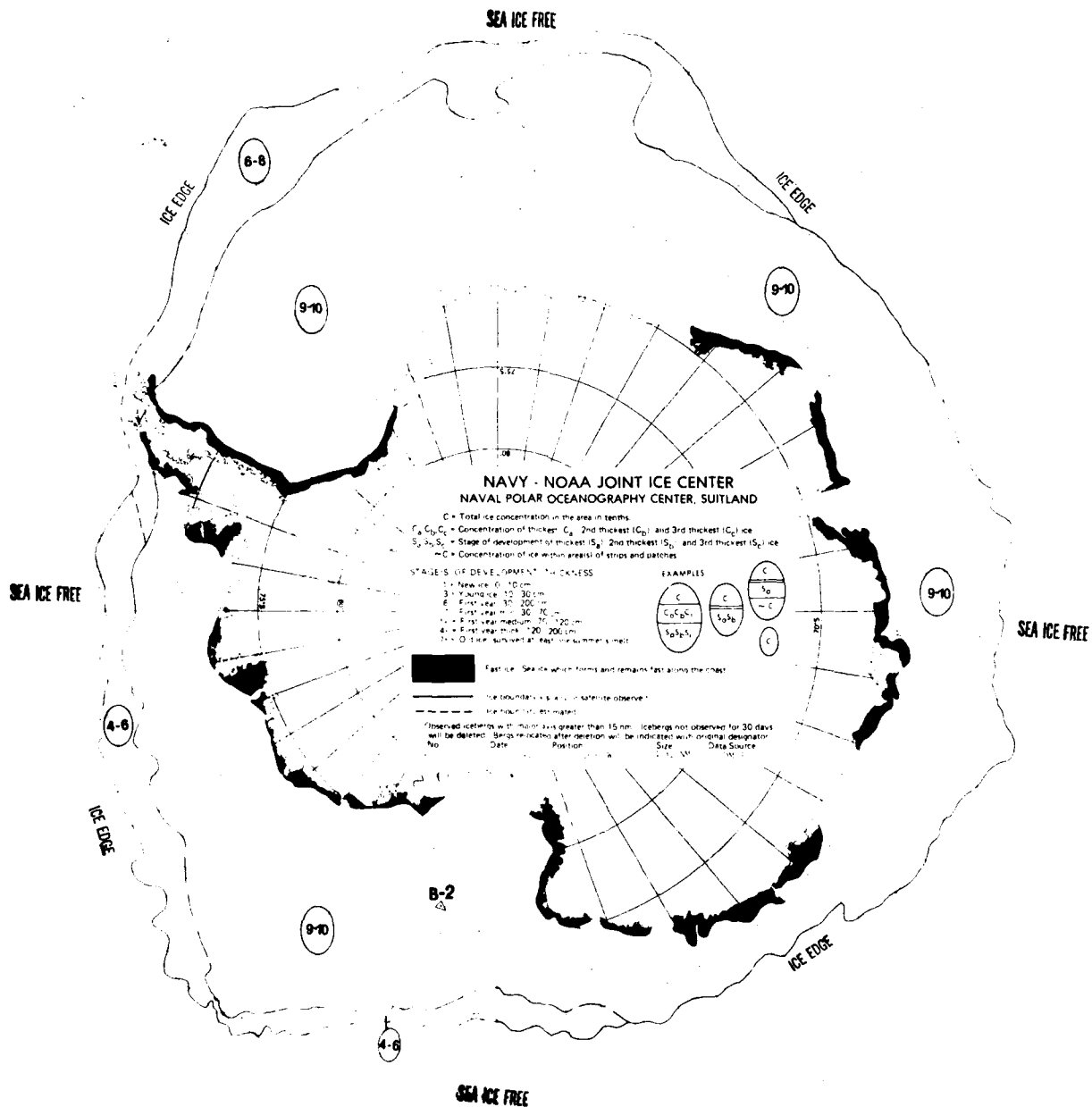
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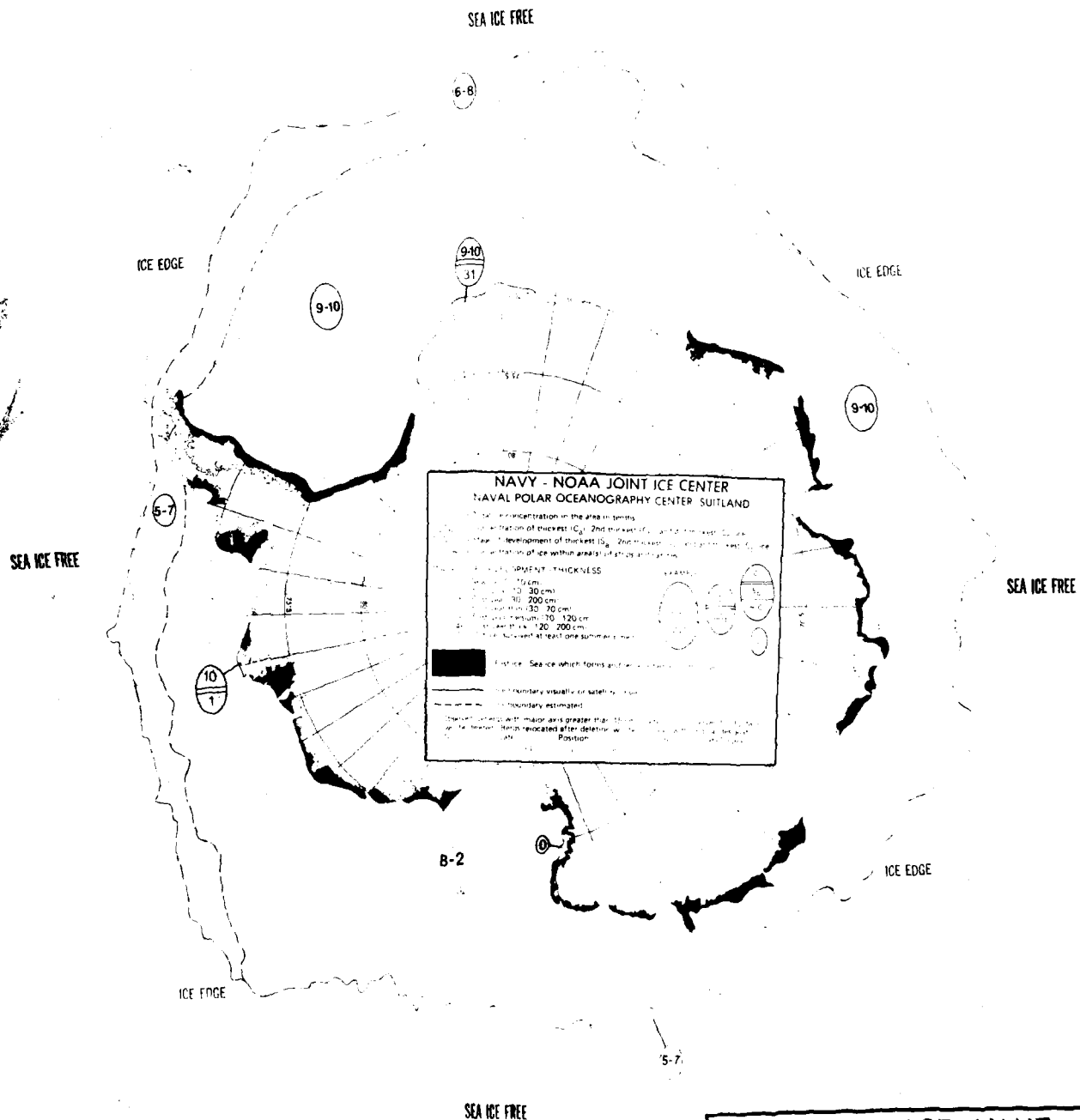
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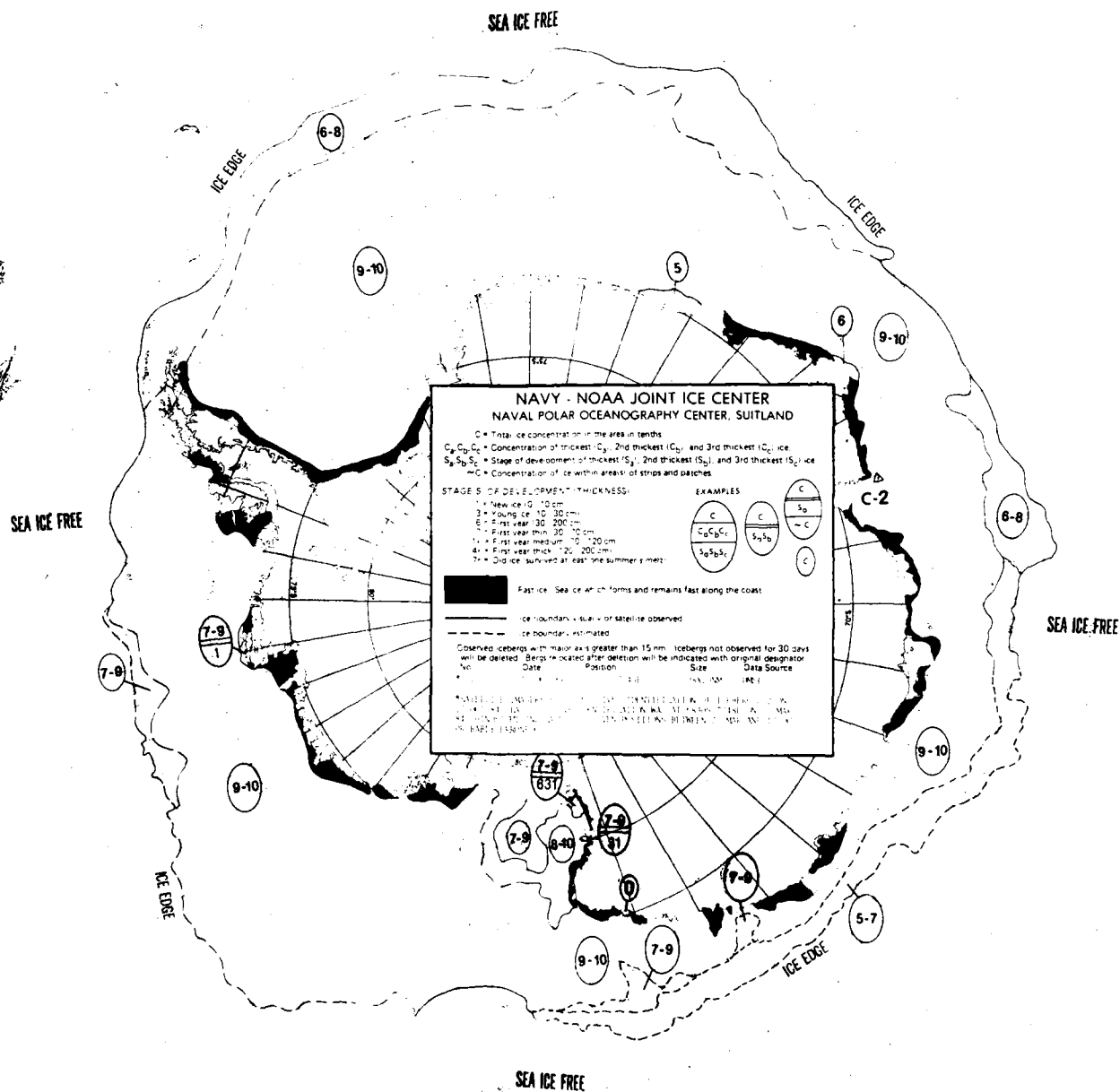
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 NAVAL POLAR OCEANOGRAPHY CENTER, SUITLAND



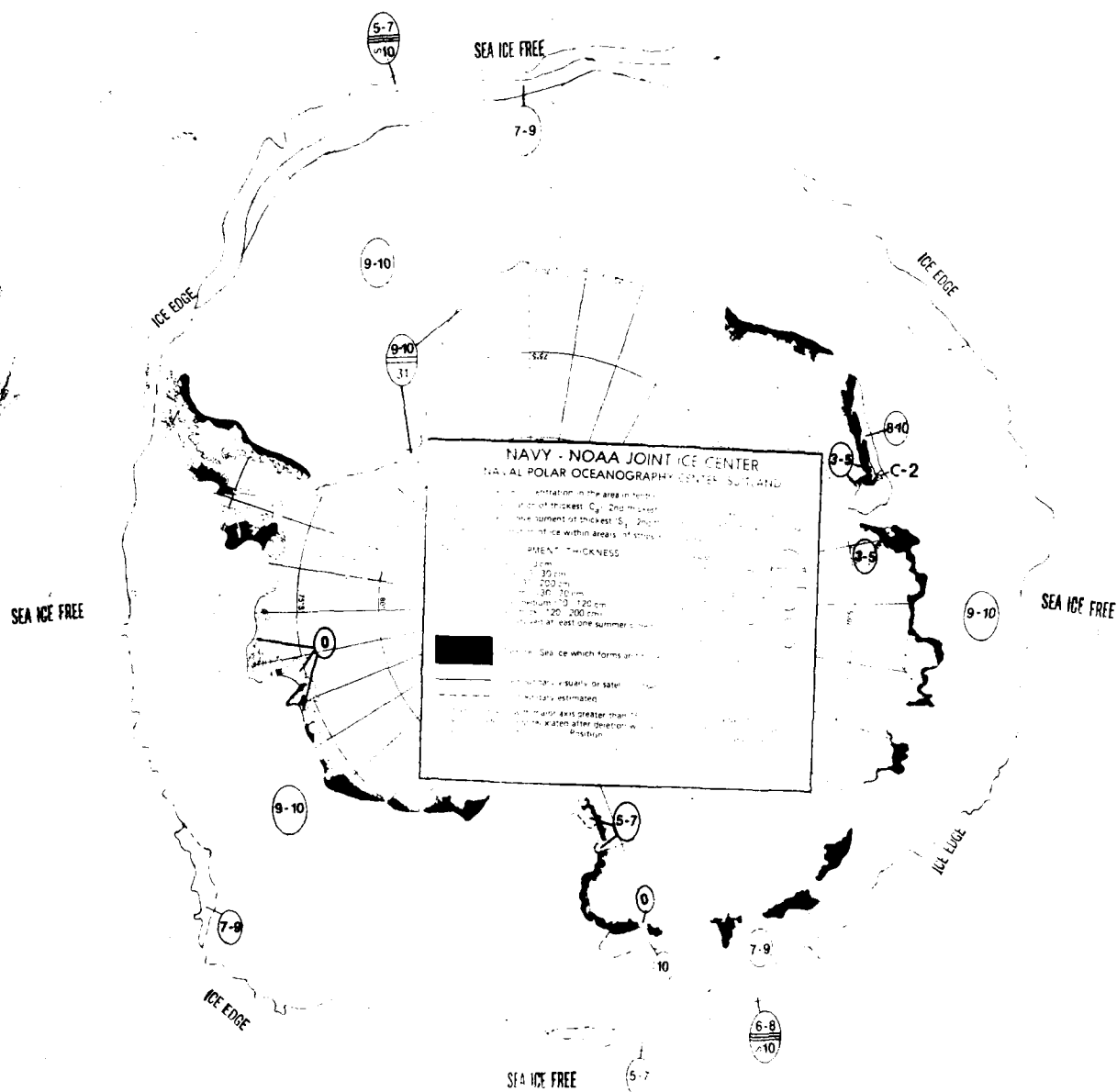
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NAVY—NOAA JOINT ICE CENTER
NAVAL POLAR OCEANOGRAPHY CENTER, SUITLAND



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 NAVY—NOAA JOINT ICE CENTER
 NAVAL POLAR OCEANOGRAPHY CENTER, SUITLAND



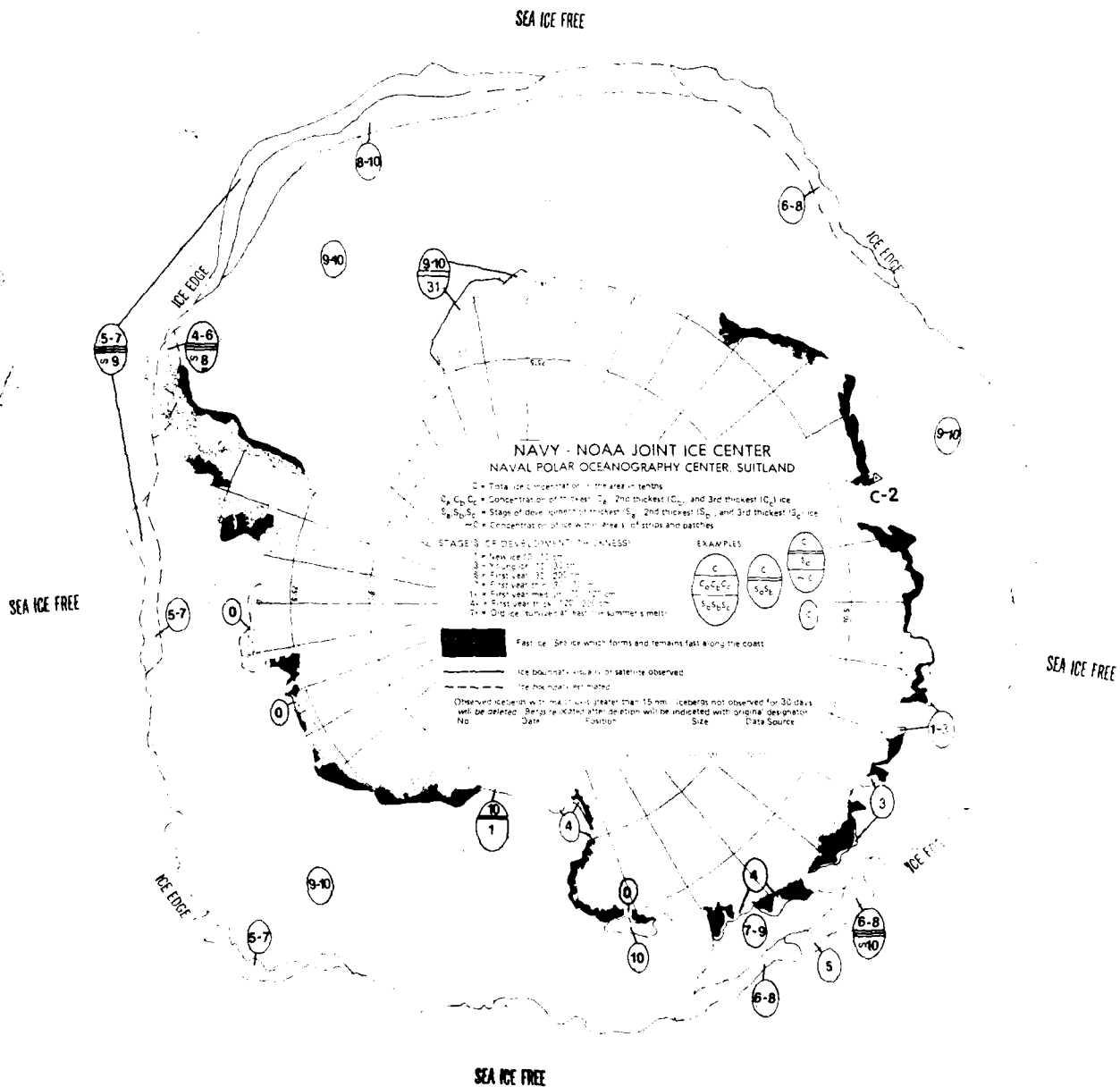
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 NAVAL POLAR OCEANOGRAPHY CENTER, SUITLAND



NORTHERN ICE LIMIT

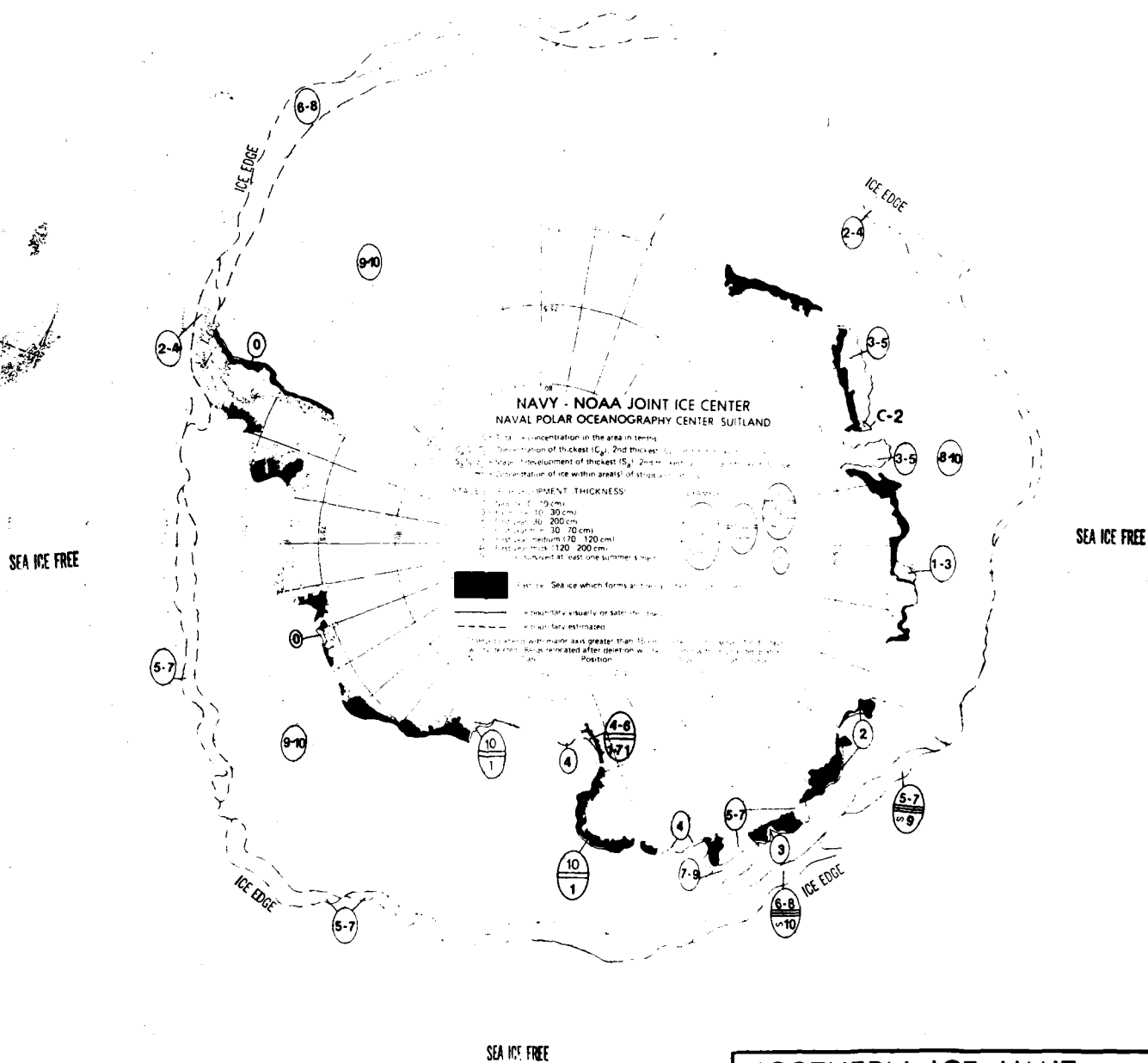
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NORTHERN ICE LIMIT
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 NAVAL POLAR OCEANOGRAPHY CENTER SUITLAND

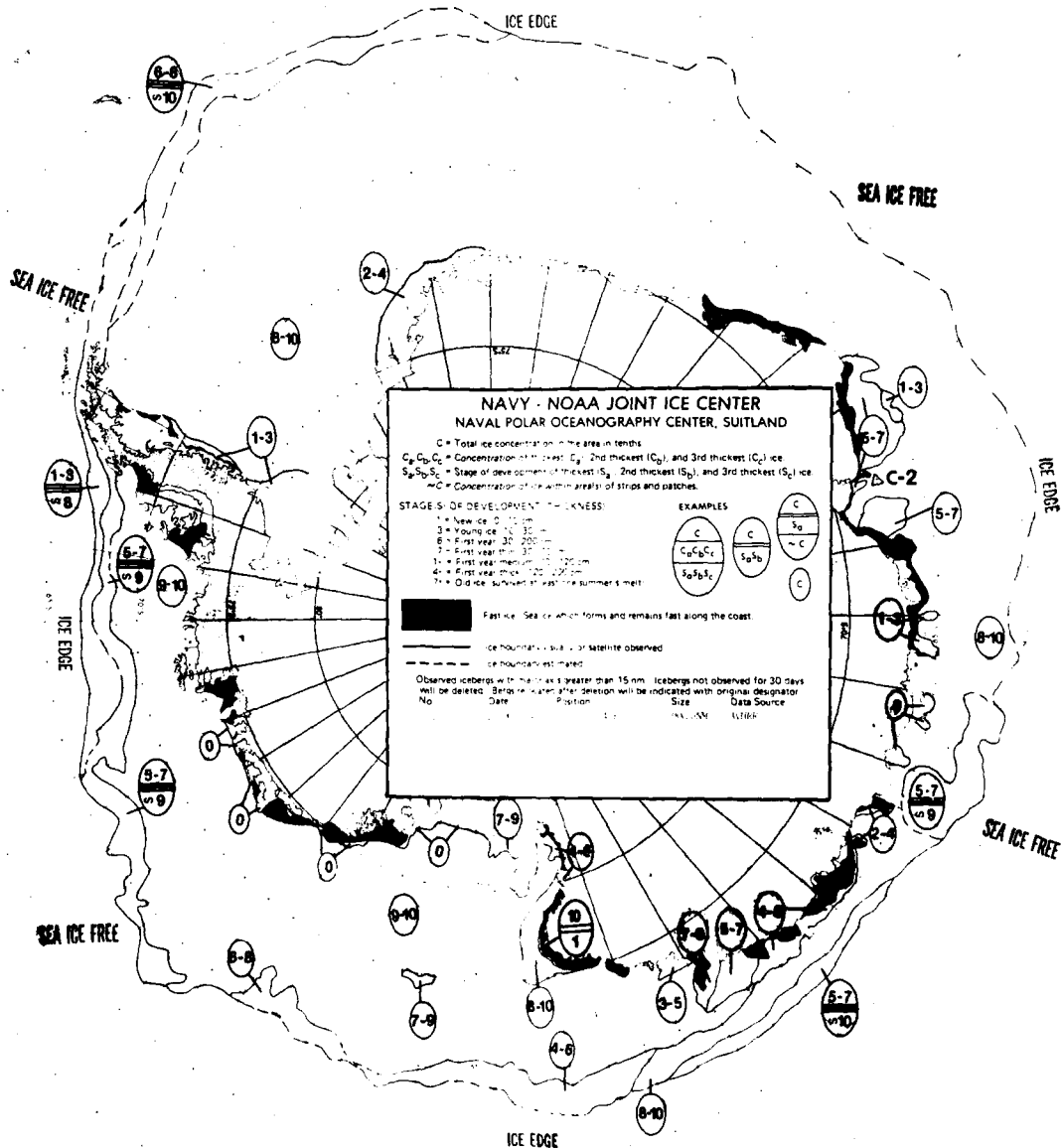
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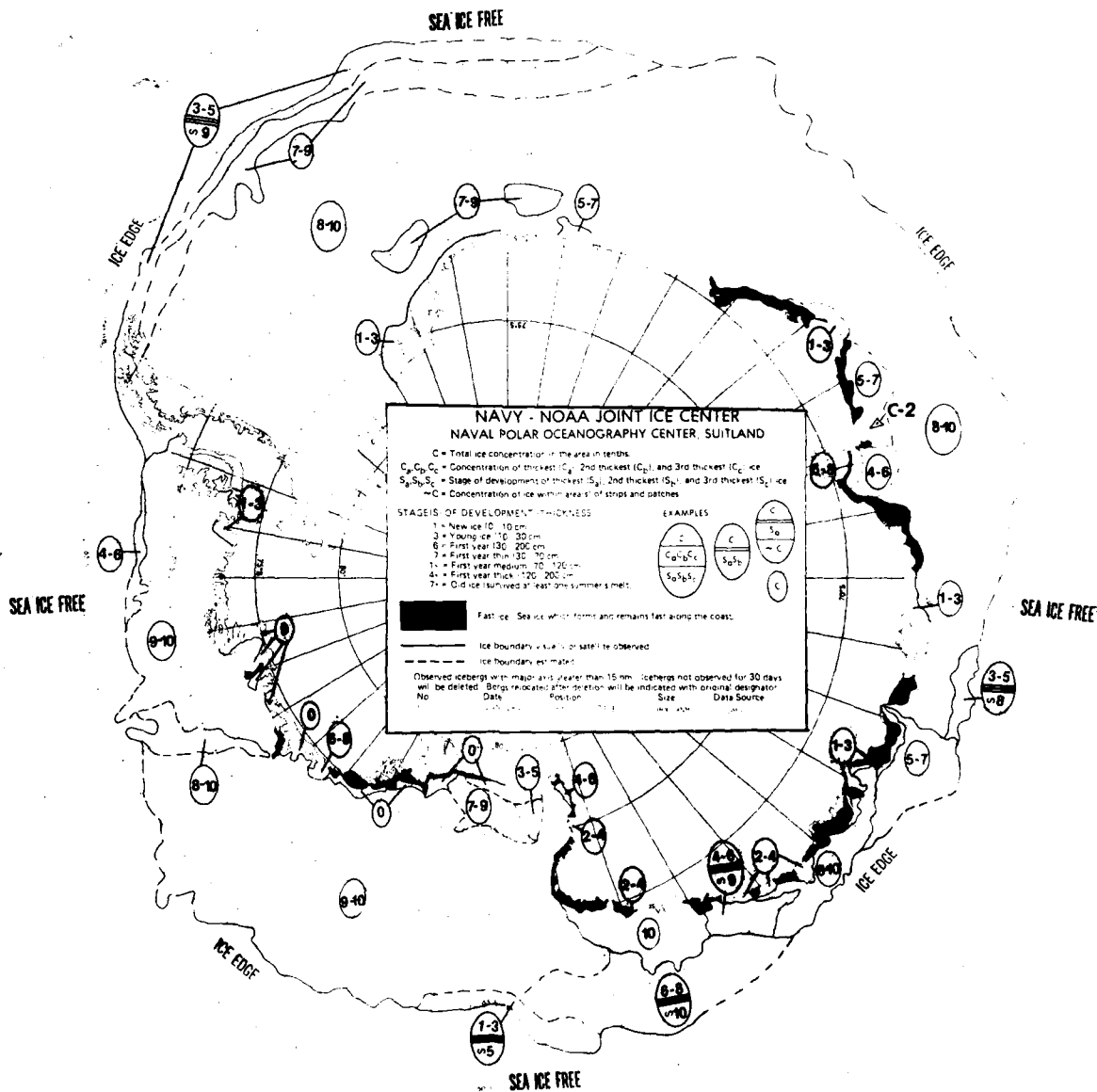
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NAVAL POLAR OCEANOGRAPHY CENTER, SUITLAND



NORTHERN ICE LIMIT

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NAVY—NOAA JOINT ICE CENTER
NAVAL POLAR OCEANOGRAPHY CENTER, SUITLAND



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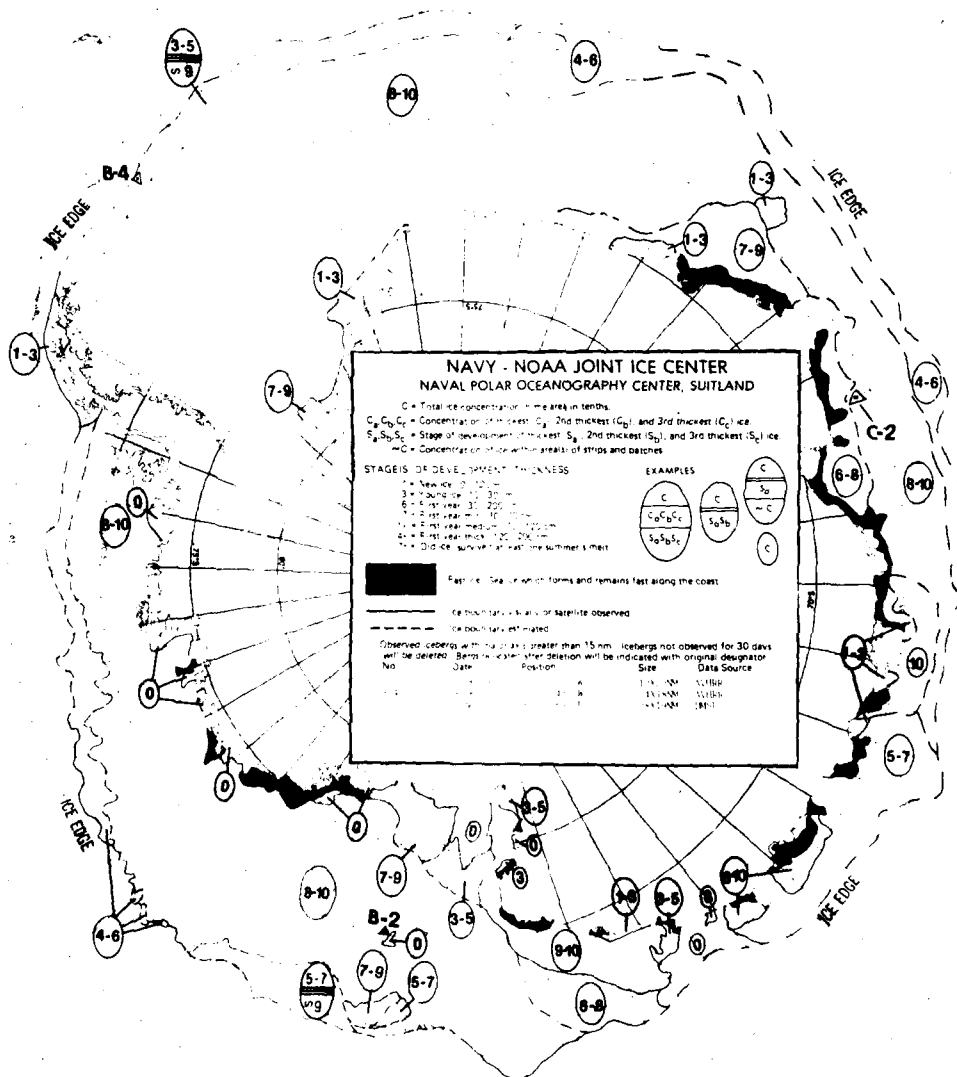
NAVY—NOAA JOINT ICE CENTER
NAVAL POLAR OCEANOGRAPHY CENTER, SUITLAND

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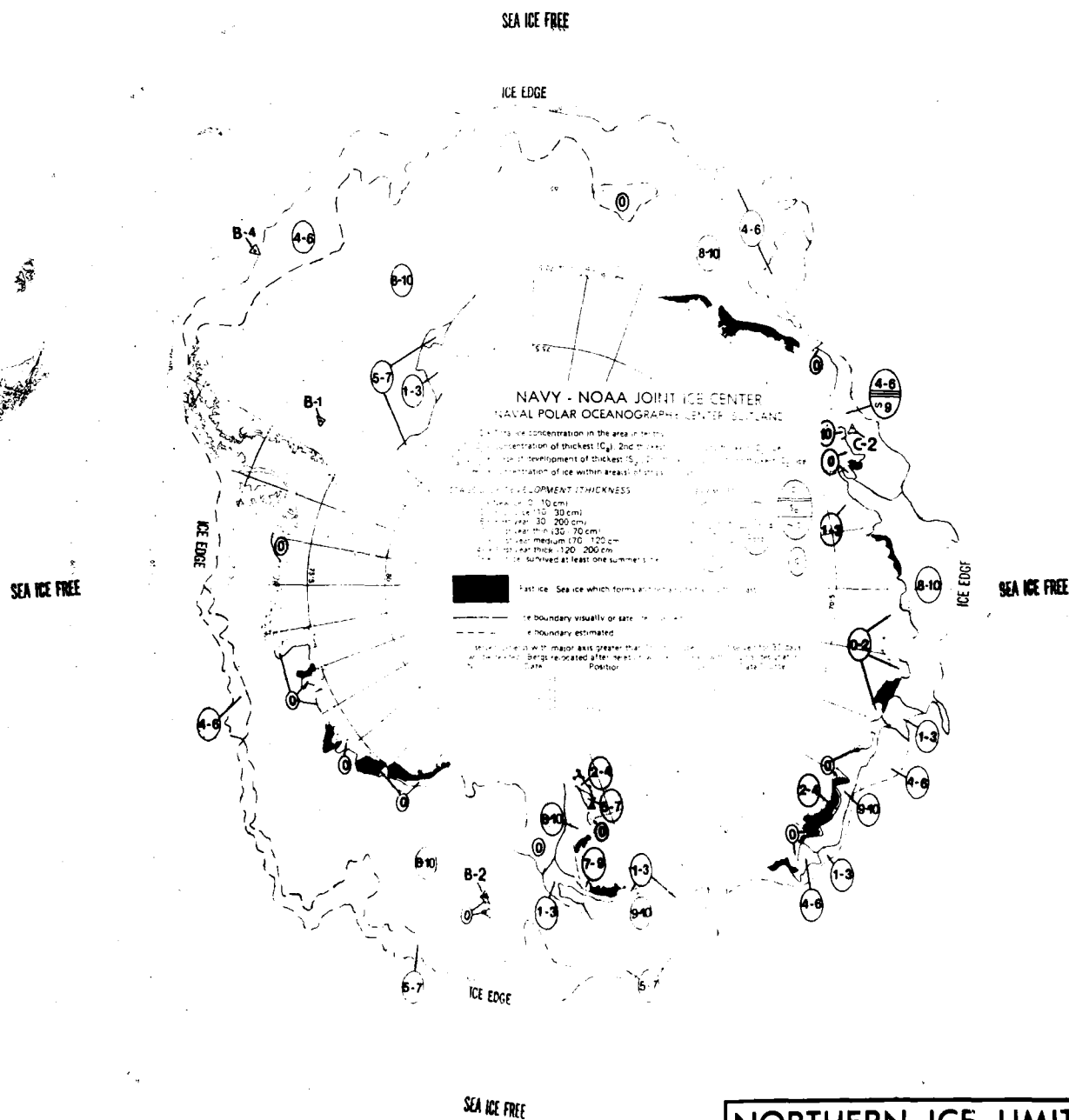


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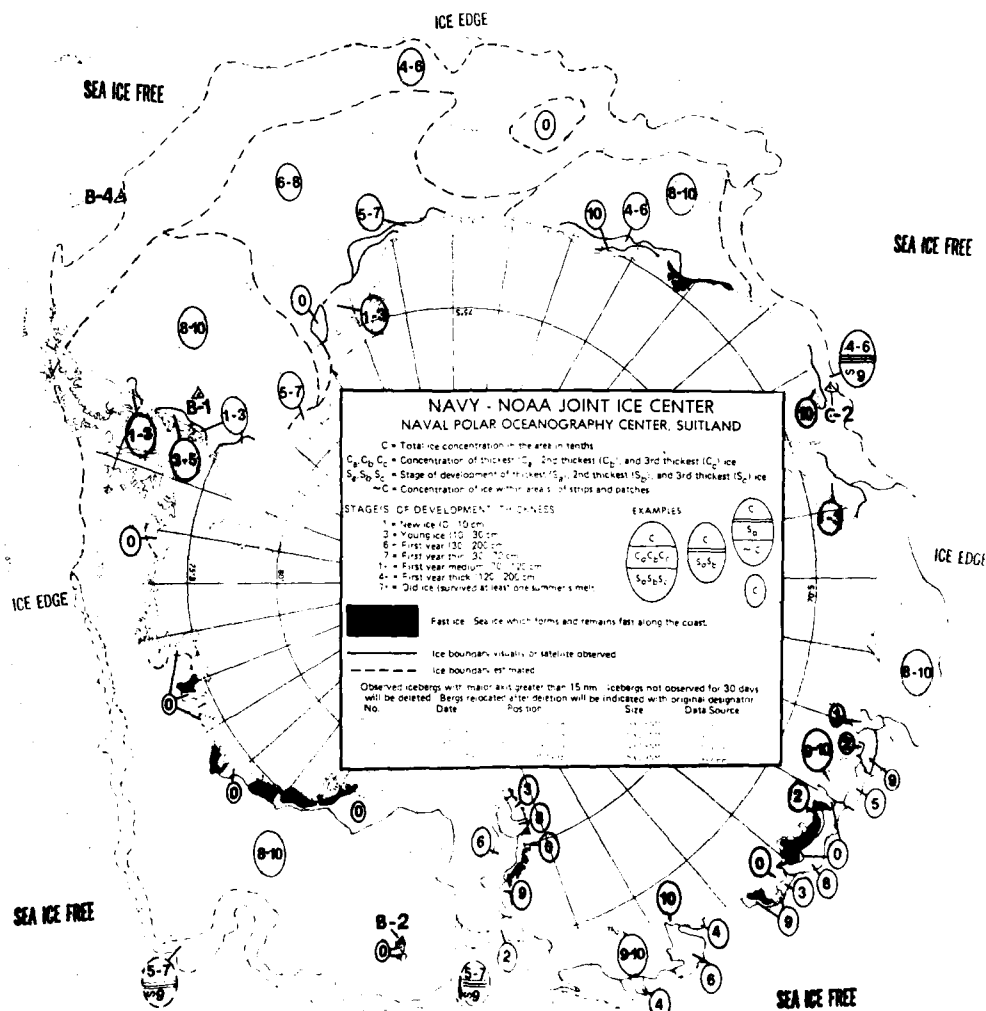
NAVAL POLAR OCEANOGRAPHY CENTER, SUITLAND



NORTHERN ICE LIMIT

Date: 20 DEC 84

NAVY—NOAA JOINT ICE CENTER
NAVAL POLAR OCEANOGRAPHY CENTER, SUITLAND



NORTHERN ICE LIMIT
Date: 17/1/54
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NAVAL POLAR OCEANOGRAPHY CENTER, SUITLAND

TABLE I SATELLITE DATA UTILIZED DURING 1983 AND 1984

Time Period		Satellite Remote Sensing			Resolution	Coverage
From	To	Sensor Platform	Sensor Type	Spectral Region		
1-83 6-84	3-83 12-84	NOAA-6	AVHRR HRPT/LAC VIS NIR IR	0.58-0.68 um 0.73-1.10 um 10.5-11.5 um	1 km	Regional
			GAC VIS IR	0.58-0.68 um 10.5-11.5 um	4 km	Global
1-83	12-84	NOAA-7	AVHRR HRPT/LAC VIS NIR IR	0.58-0.68 um 0.73-1.10 um 10.5-11.3 um	1 km	Regional
			GAC VIS IR	0.58-0.68 um 10.3-11.3 um	4 km	Global
3-83	6-84	NOAA-8	AVHRR HRPT/LAC VIS NIR IR	0.58-0.68 um 0.725-1.10 um 10.5-11.5 um	1 km	Regional
			GAC VIS IR	0.58-0.68 um 10.5-11.5 um	4 km	Global
1-83	12-84	NIMBUS-7	SMR	0.81 cm 1.66 cm	50 km	Global
1-83	2-83	DMSP-F(3)	VIS IR	0.4-1.1 um 8.0-13.0 um	3.7 km 4.4 km	Global
1-83	12-84	DMSP-F(6)	VIS IR	0.4-1.1 um 10.2-12.8 um	3.7 km 4.4 km	Global
11-83	12-84	DMSP-F(7)	VIS IR	0.4-1.1 um 10.2-12.8 um	3.7 km 4.4 km	Global

Abbreviations and Acronyms

AVHRR - Advanced Very High Resolution Radiometer
 cm - Centimeter
 GAC - Global Area Coverage
 HRPT - High Resolution Picture Transmission
 IR - Infrared
 km - Kilometer
 LAC - Local Area Coverage
 NIR - Near Infrared
 SMR - Scanning Multifrequency Microwave Radiometer
 VIS - Visible
 um - Micrometer

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